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COUGH

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COUGH IS THE MOST constant symptom of respiratory tract disease, and often presents a perplexing problem in respect to its aetiological diagnosis. The purpose of this paper is to review briefly the physiology of cough, the anatomy of the cough reflex, the aetiology of cough, and to discuss its investigation.

PHYSIOLOGY

Cough is a reflex which helps clear the respiratory passages of secretions and of foreign material which may enter from outside. It consists essentially of a sharp explosive expulsion of compressed air from the tracheo-bronchial tree. The act of coughing begins with an inspiration followed by closing the glottis. A forced expiration is then initiated followed by the abrupt opening of the glottis plus closing off of the naso-pharynx by the soft palate. The air, under increased pressure, is thus driven from the respiratory tree via bronchi, trachea and pharynx, and is expelled through the mouth.

Cough clears the primary bronchi and trachea of material; the smaller bronchi are cleared by two mechanisms:

(1) Cilia which propel particles of material towards the trachea.

(2) Pumping action of the bronchi which drives small particles towards the trachea; this action is produced by lengthening and dilation of the bronchi on inspiration, and shortening and contraction of the bronchi on expiration.

ANATOMY OF THE COUGH REFLEX

AFFERENT PATHWAY

1. The main areas in which the cough reflex is initiated are main bronchi, trachea, larynx and pharynx. These areas are supplied by afferent fibres of the Vagus nerve; hence the main afferent pathway is the Vagus nerve.

Other pathways are:

2. The branch of the Glossopharyngeal nerve from the pharynx.
3. The branch of the Trigeminal nerve from the nose.
4. Other branches of the Vagus nerve (*e.g.* pleural and cardiac).

REFLEX CENTRE

The reflex centre for cough is located in the medulla near the respiratory centre.

EFFERENT PATHWAY

1. Inferior laryngeal nerve to the glottis.
2. Phrenic nerve to the diaphragm.
3. Spinal nerves to the muscles of respiration.

AETIOLOGY

There are many varieties of stimuli which can initiate the cough reflex.

Inflammation

(1) Inflammation caused by a lesion of the tract itself.

Cough can be produced by any type or any degree of inflammation varying from hyperaemia of the mucosa such as occurs in coryza and bronchitis, to ulceration of the mucosa such as occurs in tuberculosis.

(2) Irritation of the tract caused by a lesion above the tract.

In sinusitis, mucus from the infected sinus drips into the pharynx and there directly irritates afferent fibres of the Vagus nerve and cough is produced.

Irritating agents from the environment

A common environmental irritant producing cough is tobacco smoke. Cough is prevalent in workers exposed to fumes, smoke, gases, chemicals and dust; the housewife may have cough caused by house dust. Inhalation of cold air will also cause cough.

Neoplasm of the larynx, glottis or bronchus

Cough can be produced by a papilloma or a carcinoma of the larynx, a bronchogenic carcinoma, an adenoma of a bronchus, but rarely by secondary tumors in the lung.

Extrabronchial masses in the mediastinum

Extrabronchial masses such as aneurysm or neoplasm may produce cough by either: (1) involving the recurrent laryngeal nerve, or (2) encroaching on the trachea or a bronchus.

Increased irritability of the pathway for cough

During an acute inflammation of the respiratory tract a reflex pathway for cough is established. After such an inflammation has subsided, this reflex pathway remains and its afferent fibres are sensitive not only to cough-producing stimuli but also to stimuli which ordinarily do not initiate the cough reflex.

Asthma and emphysema

In asthma, emphysema and other conditions associated with increased mucus production, the resulting cough is often severe.

Foreign body reactions

Inhalation of irritating dusts containing silica, over a long period of time produces a condition called pneumoconiosis in which there is a progressive foreign body reaction which ends in fibrosis of the lung parenchyma, and which is associated with impairment of pulmonary function. Common types of pneumoconiosis are silicosis, asbestosis and anthracosis.

Aspiration of blood, vomitus or any foreign body causes a cough due to: (a) irritation of the mucosa by the material itself, (b) inflammation of the respiratory tract in response to the presence of the material, and (c) obstruction which may occur if a bronchus is blocked.

Cardiovascular causes

Left ventricular failure and mitral stenosis are the most common cardiovascular lesions causing pulmonary congestion which may result in cough. Pulmonary infarct can produce a cough which may be productive of bloody sputum.

COUGH CAN OCCASIONALLY BE A MANIFESTATION of pleural or ear pathology.

PSYCHOGENIC CAUSES

Cough may be the result of nervous habit. There are individuals who suffer daily from recurrent bouts of coughing and in whom no cause for these can be demonstrated and no further development or ill health ensues.

INVESTIGATION OF COUGH

There are three essentials in the investigation of cough: History, Physical Examination and Special Investigation.

HISTORY

In an investigation of the cause of cough a history of cough, sputum, haemoptysis, dyspnoea, pain in the chest, sensation of weight in the chest, previous chest illnesses and exposure to tuberculosis should be inquired for. A functional inquiry should also be made to assess the patient's general health.

1. Cough

   A history of cough should contain information re duration, mode of onset, severity, production, constancy, paroxysms, morning cough and clearing of the throat.

   The duration of cough gives an idea of whether the underlying condition is acute or chronic. Cough may persist after an acute upper respiratory infection has subsided.

   The mode of onset of the cough and aggravating circumstances are important. The patient may be able to relate the onset of his cough to some activity or place. This suggests the presence of some irritating environmental agent as the cause, *e.g.* a farmer may complain of cough only at threshing; his cough is caused by straw dust. Tobacco smoke is a common cause of cough, and the cough will disappear when the patient stops smoking. Cough after exertion occurs in any chest lesion as well as in asthma and pulmonary congestion. Cough which wakens a patient at night may be caused by an infection of the respiratory system or by pulmonary congestion from impaired function of the left ventricle.

   A cough due to an acute respiratory infection may be so severe that it keeps the patient awake at night. In some persons the mildest cough will end in vomiting, while in others, no vomiting occurs although the cough may be severe and exhausting. Vomiting at the end of coughing is characteristic of whooping-cough.

   A constant cough is suggestive of a lesion in the respiratory tract; an inconstant cough is suggestive of an environmental irritating agent. A seasonal cough which occurs only in August is likely to be caused by asthma due to ragweed pollen. Paroxysms of cough occur in whooping-cough and asthma. Morning cough is usually due to accumulation during the night of secretions which have fallen into the pharynx from lesions above, *e.g.* chronic low-grade sinus infection.

2. Sputum

   If the cough is productive of sputum, information re amount, colour, consistency, blood, course and odor of sputum should be obtained.

   A non-productive cough occurs when the bronchial mucosa is congested with little or no exudate as in the early stages of acute bronchitis, or when the underlying cause is a non-inflammatory process. A productive cough occurs when the exudate

increases in amount and is free in the bronchi as in broncho-pneumonia or bronchiectasis or pulmonary congestion.

A yellow or green-coloured sputum is produced in infective lesions; a white or greyish sputum is produced in pulmonary congestion and non-inflammatory lesions such as asthma or emphysema. A thin, watery sputum occurs in pulmonary oedema. Asthma can produce either a thin watery sputum or thick tenacious mucus which can plug bronchi.

The expectoration of large amounts of sputum on change of posture is suggestive of a localized lesion such as occurs in bronchiectasis or lung abscess. Foul-smelling sputum is produced by proteolytic bacteria (*e.g. B. proteus, B. coli, B. pyocyaneus*) which are usually secondary invaders.

Sputum containing bright red blood is commonly found in pulmonary oedema, pulmonary hypertension of mitral stenosis, tuberculosis, bronchiectasis, bronchogenic carcinoma and pulmonary infarction. Spitting up of blood may vary in amount from streaks to several pints; the blood may be pure or mixed with sputum or saliva. Haemoptysis must be differentiated from haematemesis. In haemoptysis the blood is frothy, alkaline in reaction and associated with cough; there is often a history of respiratory disease. In pulmonary oedema, a blood-stained watery sputum is produced. Pulmonary infarction can produce either a blood-stained watery sputum or dark masses of almost pure blood intermingled with mucus. Extravasated blood if allowed to stand for awhile in the bronchi may be altered by the action of organisms, (*e.g.* Pneumococcus) and appear brown in colour.

3. Other symptoms of respiratory tract disease.

   Dyspnoea, pain or a sensation of weight or tightness in the chest should be inquired into, as they may be symptoms of respiratory tract disease.

4. Previous chest illnesses

   Specific inquiry re chest colds, pleurisy, pneumonia, bronchitis and asthma should be made. A history of asthma may be of value in determining its aetiology.

5. Functional enquiry

   A functional enquiry is of value in assessing the general health of a patient. A history of chills, fever, malaise, tiredness, weakness, anorexia, generalized aches and pains is indicative of an acute infection. Fatigue, weakness, anorexia and loss of weight point to a chronic or a wasting disease.

   A history of a common cold with sneezing and nasal discharge, or a history of sinus disease with nasal and postnasal discharge and pain over the sinuses are suggestive of the probable cause of the cough.

   Hoarseness, loss of the voice, frequent clearing of the throat and pain on speaking should be noted. These may be caused by inflammation, degeneration or neoplasm of the vocal cords or larynx, or by involvement of the recurrent laryngeal nerve.

   The function of the cardiovascular system should be inquired into, and a functional enquiry of the other systems of the body made.

   A patient's occupation may reveal a possible cause of cough. A person who uses his voice a great deal (*e.g.*, schoolteacher or clergyman) may have a persistent cough with no other

symptoms or signs. Occupations associated with irritating agents (*e.g.*, mining, sand blasting) may be the source of the cough.

The age of a patient leads one to think of common causes in his age group. The commonest cause of cough in any age group is the common cold. In babies and young children, frequent causes are bronchitis, bronchopneumonia, lobar pneumonia, whooping cough and a foreign body in the larynx. In young adults, frequent causes are asthma and bronchiectasis; in this age group, care should be taken not to miss any cases of tuberculosis. In middle-aged and older patients, emphysema, bronchitis, and neoplasms are most often the cause.

Physical Examination

1. General

The general appearance of the patient should be noted. He may appear perfectly well, or acutely ill and cyanosed with respiratory distress, or pale, poorly nourished and tired. The temperature, pulse and respiratory rate should be obtained. Examine the fingers for clubbing; this is a sign which is frequently present in certain chronic diseases of the chest and heart.

2. Head and Neck

The nose should be examined for patency of passages, polyps and discharge. Transilluminate the nasal sinuses. Look for postnasal discharge in the throat. Examine the mouth for inflammation of the fauces, tonsils and pillars. With the aid of a head mirror examine the posterior nasopharynx, larynx and vocal cords for inflammation and neoplasm; the movement of the vocal cords should be observed and any paralysis noted.

Examine the neck for engorged jugular veins which occur in congestive failure and in obstructions due to a mass in the superior mediastinum. Determine the position of the trachea, whether it is in the mid-line or deviated to one side.

3. Chest

Careful examination of the chest must be made, employing inspection, palpation, percussion and auscultation to determine the presence of any chest lesion. The heart should be examined for evidence of enlargement or valvular disease, and the blood pressure taken.

4. Examination of the other systems of the body should be done to determine the presence of any other lesions.

5. Cough

The patient will most likely cough several times while he is being examined. A short, dry, irritable cough occurs in congestive catarrhal conditions of the pharynx or upper air passages. A veiled husky timber occurs in mild catarrh of the vocal cords, while in a more severe laryngitis a hoarse, croupy cough is produced. Destructive lesions of the vocal cords such as tuberculosis or neoplasm cause a toneless, whispering aphonic cough. Cough associated with stridor occurs in a partially obstructed larynx or trachea.

6. Sputum

If sputum is present the amount, colour, appearance, consistency and odor should be noted.

Special Investigation

1. Sputum examination

If cough is productive of sputum, several samples of fresh sputum should be sent to a laboratory. Specific in-

structions re type of examination required must accompany each sample. A smear to determine organisms and type of cell (*e.g.,* polymorphs, eosinophils) present in the sputum is of value. Smear and culture can be done for routine organisms or for tubercle bacilli. Examination for fungi is possible. Cytological examination to determine the presence or absence of malignant cells can be done.

2. Radiological investigation

Fluoroscopy is important in the visualization of diaphragmatic movements and grosser evidences of chest pathology. A six foot P-A and a lateral chest X-ray should be done if history and physical findings point to a chest lesion. If a chest film shows a lesion, the site and nature of which are difficult to determine, oblique chest films may show the lesion more clearly; a series of films called planigrams or tomograms, which are taken at different distances from the chest wall will aid also in a better visualization and localization of the lesion.

3. Lipiodol bronchogram

If signs of an obstruction of a bronchus are found on physical examination, a bronchogram will show the site and nature of the obstruction. The positive diagnosis of bronchiectasis is found in a bronchogram.

4. Bronchoscopic examination

This examination is indicated if a local lesion of a primary bronchus is suspected after a history and physical examination have been completed. During this examination a biopsy of a lesion present in the bronchus can be taken and washings for cytology done.

The completion of a history, physical examination and any necessary special investigations should supply sufficient information so that a diagnosis (anatomical, aetiological and pathological) of the cough can be made, and treatment instituted.

ACKNOWLEDGEMENT

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THE DOCTOR'S BAG

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When your Editor suggested that this might be an opportune subject for an article in the Medical Journal, I was unimpressed by its limited scope and apparent unimportance. However, when a grad of 3T8 recently joined my group after an extensive experience in the army and post graduate study, and rather sheepishly came into my office with the question, "What in blazes should I get to put in this bag?", I realized that perhaps a discussion of the subject might be worthwhile after all.

CHOICE OF BAG

The usual sequence of events starts with the gift of a bag of sorts to the newly capped graduate by his admiring family. Perhaps forlornly adorning its interior are two or three syringe or ampoule cases. Let us start off there.

Medical bags come in an unlimited variety of shapes and sizes, with a certain proportion being too big, too small, too difficult of access. There are simple plain ones, and complicated fancy ones, but I want to talk about an ordinary useful bag for an ordinary useful practitioner, and what to put in it.

First of all, size. . . . No matter how big it is, it is never big enough; therefore it would seem sensible to get one that is convenient, light, durable, and above all, neat and professional in appearance. A recent newcomer to medical practise here has an amazing bag; to be sure it is big and black and shiny—but it reminds me of a housewife's shopping basket, for he can never get it closed! After a couple of years, he will no doubt discard it for something more practical, as he is a man endowed with a little more than average wisdom.

The present trend is toward bags rather longer than the older ones, with pentagonal cross-section, and rigid construction. I personally prefer a smaller type, with softer leather, that can to some extent accommodate itself to its contents. I realize that men in isolated country practise require a much more extensive armamenterium than those in urban or suburban work, but in such a case it is wiser to carry in your car two bags—one of which will contain the usual items of daily use, and the other, those you use less frequently. If your practise is largely in urban areas, you might be well advised to get a bag that might, if anything, err on the small side; and perhaps later augment this with another, if you feel the need of transporting a large part of your office with you. If you are to be in a scattered suburban or rural area, then by all means carry two bags in your car. Remember, however, that at times you may have to carry your bag a considerable distance, and it does become filled with lead on these occasions! No matter what type you acquire, the appearance of the bag should at all times fit the dignity of the profession, and this should include giving it a coat of polish once in a while.

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In general, you will need certain basic pieces of equipment, and the two most

Kelowna, B.C.

important and largest are an anaeroid blood pressure cuff and an EENT diagnostic set. These you may already have, but if not, get ones that will stow readily in your bag and not be cumbersome. There are many makes from which to choose and most of them are dependable and good. If you have a soft leather container, so much the better, as they will fit your bag that much more easily; and believe me, packing a medical bag is even more difficult than packing a girl's travelling case for an overnight trip!

Instruments

You will need a sterile hypo syringe with an assortment of needles, and a good type is the penlight barrel type with the syringe and needles always sterile in solution. But make sure it does not leak! Surgical instrument requirements will vary with the type of your practise and the accessibility to your office or hospital. Men who do much accident or industrial work will require a wider selection, but probably a minimum of instruments would be as follows:

- Two mosquito forceps
- Kelly forceps
- Scalpel handle with an assortment of blades
- Sliver removal forceps (for use in one's own family, if nowhere else)
- Pair of sharp straight dissecting scissors
- Small pair of bandage scissors
- Angle nasal thumb forceps
- Straight thumb forceps with teeth
- Nasal dilator or retractor
- Probe or two
- Small six-inch needle driver with an assortment of sutures with swedged-on needles in tubes.

You will also use occasionally at night one or more soft rubber catheters, and possible a silver malleable urethral staff. Perhaps you might also carry a sterile clip set, though I must confess I have not used mine for several years as almost all accident cases are taken directly to the office or hospital. A tracheotomy set I have carried for years and used only once—but this once justified its permanent place in my bag. A couple of spare thermometers and a spare stethoscope are also useful, as I have often arrived at a call to find that these most necessary items were in my other suit.

Supplies

Stock supplies of small bundles of four gauze, bandages, small rolls of ½ inch and 1 inch adhesive (more becomes soiled and crushed too easily) and a small bundle of absorbent cotton, are enough. Additional small Elastoplast dressings are useful. Tongue depressors, wooden applicator sticks both plain and cotton-tipped (mostly used to clean out your pipe) and a case of silver nitrate applicators are necessary. You will need a sterile examining glove and some lubricant, preferably carried in a jar rather than in a tube as tubes have a nasty habit of becoming punctured and the resulting mess is bad.

Drug Stocks

The first is a large D O N ' T! Don't make a habit of carrying Morphine or Heroin in your bag! You may have noticed that some doctors have their cars broken into and their bags stolen frequently, and others never have this happen, or at least only once. Those who do are the ones who routinely carry a stock of Morphine or Heroin—the glad tidings soon get around to the

"dopies" and that doctor is a marked man.

General supplies would include the following, carried in two-ounce, ground-glass, stoppered bottles, with a metal safety screw-on cap (these often come with the bag as part of its equipment, and fit into pockets along one side).

Tinctures and aqueous solutions of
Zephiran and Metaphen
Propyl Alcohol
Tinctures of Benzoin and Iodine
Hydrogen Peroxide
Boracic Acid solution.

Powders, either B.F.I. or Cibazole, are often used, and the small sample container is good for the bag.

Hypodermic drugs certainly include: Apomorphine, Picritoxin, Adrenaline, Strychnine, Pitocin, Ergotrate, Ephedrine and an ample supply of Coramine. It might not be out of place to mention that the dosage of Coramine in practise far exceeds that given in courses in Therapeutics and Pharmacology, with the minimum dose for an adult being at least 5 c.c. to do any appreciable good, and in true respiratory emergencies 20-40 c.c. intravenously should be used. But don't quote me on an exam paper!

Ointments are of value in a medical bag, but should be carried in jars, not tubes, to prevent soiling the bag in case of squashing. Of note is the proprietory ungent Surfocaine, a truly anaesthetic ointment for raw or burned areas. It has the added advantages of being water soluble and bland. Probably by the time you get around to using these, they will have become pharmacological rarities, so short is the life of most new products on the pharmacological market. Most Dermatologists rightly decry the use of topical sulphonamides and antibiotics, by reason of the high degree of sensitization to these drugs through topical application so it is wise not to carry them. One exception might be one of the Tyrothrycin ointments, as it is not used systemically.

In this regard, particularly with dermatological preparations, do not be overhasty to discard the tried and tested formulae, as they have stood the test of time, and will work well in the majority of cases. A digression here may not be amiss, to point out the one great exception to the above statement. The very recent introduction of the new "neutral" bases for ungents has practically revolutionized dermatological prescription writing, making many more preparations available in elegant and stable ointment form. Of these bases, Ung. Lyophillicum, C.F., is the best from a practical standpoint, and will take up in stable form almost any drug you wish to use. For example, the following prescription is of great use:

Pyribenzamine	½%
Phenol	½%
Preparata Calaminae	2½%
Ung. Lyophillicum qs ad oz.	4

This preparation is the most soothing to a fiery itching eczema that I know of, and will win you a host of friends. Prior to the use of this neutral base, Pyribenzamine would not remain stable, and the ointment would break down.

Another similar preparation is your old friend and so-called intestinal antiseptic, Salol. A 5 percent mixture of this in Ung. Lyophillicum is an anti-sunburn ointment without peer, particularly in very blonde or fair-skinned people. Salol likewise would not resist the heat of a summer day in any other base that I have used, and within a week or two would become an unholy mess, not fit for use on a hog's back.

It is also wise to carry with you a small stock of frequently used drugs, which may be left at the patient's bedside at night when the pharmacist is not readily available. A suggested list follows:

Tuinal, or other barbiturate: 1 doz each, gr. ¾ and gr. 1½.
Amytal, intramuscular: 3 or 4 amp, gr. 3.
Amytal, tablets: 1 doz., gr. 3.
Urotropine: 1 doz., gr. 5.
Triple sulpha: 2 doz.
Nembudeine (Abbott), Codeine gr. ¼ with Nembutal gr. ¾ (very useful).
Frosst "292", Codeine gr. ½: 1 doz.
Sedative cough mixture: several 2 oz. bottles.
Sedative cough mixture, with Heroin or Dionin: 2 oz. bottle.
Triple sulpha suspension: several small sample bottles, to leave with ill children.
Penicillin (so-called "96 hour" type, with disposable syringe and needle): at least 2.
Demerol: 30 c.c. rubber-stoppered bottles, 50 mg./c.c.—the sedative and analgesic of choice in a bag.
Auralgan and Otosmosan (Dohow Chemical): the single most useful method of treatment of acute otitis, topically. With these, there is no longer a place for Keith's dressing.
Eye ointments, anaesthetic, either alone or with sulpha or penicillin: a number of good ones available.
Morphine or Heroin: N O N E !

I suppose the list could go on indefinitely, but these are in common usage and are almost necessary in your bag to cover the common demands of a house call. There is no necessity of transporting or emulating a drugstore You will find the ones mentioned generally sufficient, and usually necessary. Obviously, the types of practise in which you find yourself will, to some extent, modulate your requirements, but this comes with experience.

In conclusion, I would suggest that each practitioner make out a list of the contents of his bag, and then make his office nurse responsible for the maintenance of stock and supplies, with a daily check, and a weekly housecleaning. In this way it is easier to get on the track of a lost or misplaced article. This routine will likewise ensure that the expendable contents are kept fresh, and clean; and that the instruments are sterilized regularly. It will further ensure that the doctor does not emulate the plumber in arriving at his call without his tools!

I hope that this somewhat rambling account of the little black bag will be of value to some of you in the not too distant future. Each physician will have his own ideas on the subject, and this article is only intended as a guide in the choosing of proven necessities in a general family practise, and the elimination of non-essentials. If it has accomplished this purpose, it will have justified your Editor's hopes, and my slight endeavours.

Editor's note:

The opinions expressed in this article regarding drug preparations are those of the author, and do not necessarily constitute endorsement of the products by the University of Toronto Medical Journal.

THE HOSPITAL FOR SICK CHILDREN

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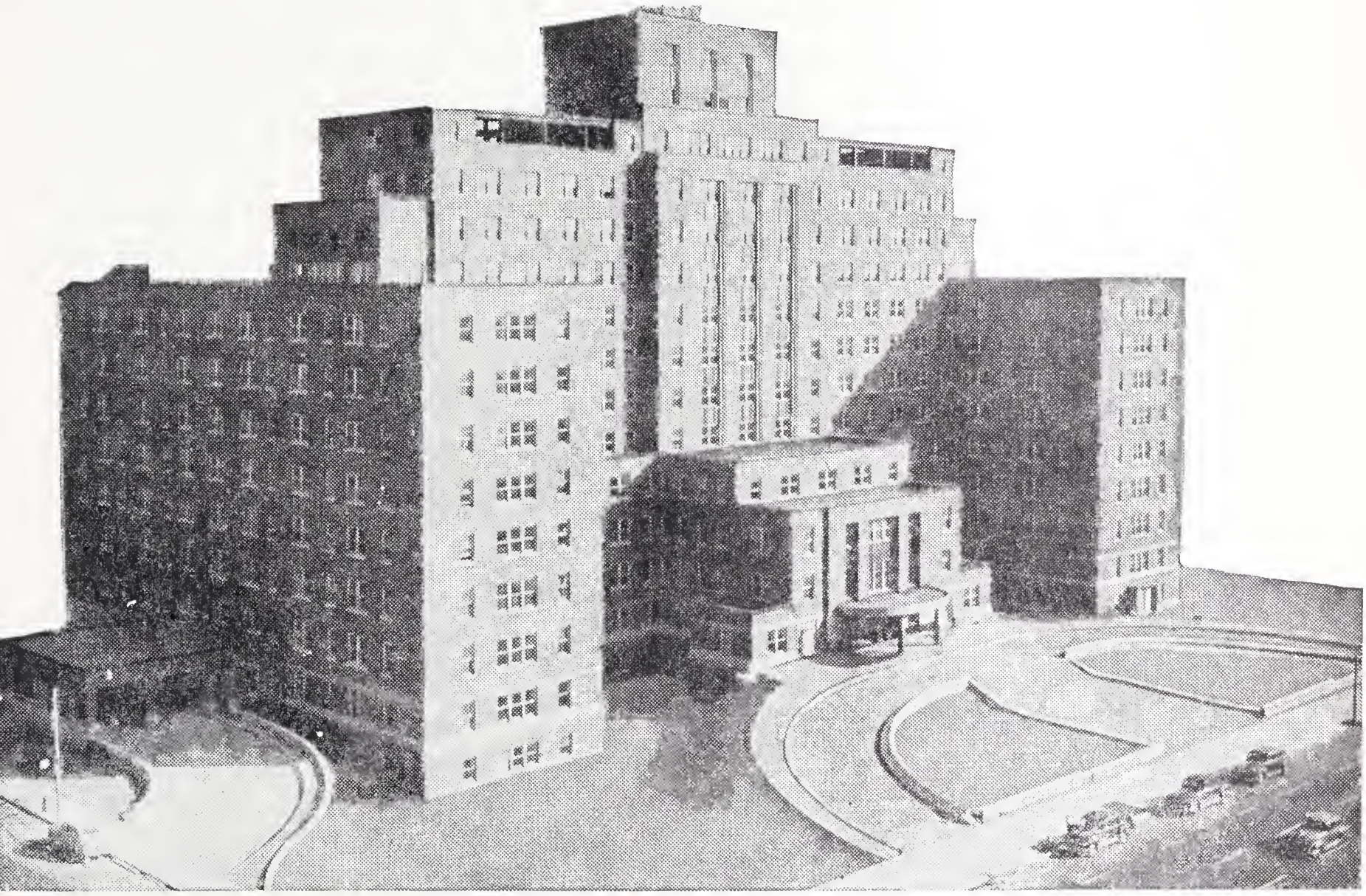


Photo courtesy The Telegram

THE NEW HOSPITAL FOR SICK CHILDREN is now in operation. The City of Toronto is the seat of what is certainly the largest and, almost certainly, the most modern paediatric centre in the world. Years of planning, and $12,500,000 have combined to provide the building which is the sixth structure in 75 years to house the ever-growing Hospital. During this period of time, well over 3,000,000 children have been under Hospital for Sick Children care.

Some idea of the service which this magnificent new structure will provide can be gained from a consideration of what the old, cramped quarters accomplished last year. Eighty thousand treatments and examinations were given in the Out-Patient Department; 13,000 patients were admitted to the Hospital for treatment; 16,000 children passed through the X-ray department; 45,000 plates were taken. The Hospital dispensary filled 160,000 prescriptions; the orthopaedic workshop provided almost 13,000 splints and appliances for crippled legs, arms, and backs.

Six hundred and thirty-two beds in the new Hospital replace the 320 beds in the old. The tremendous backlog of

chronic cases, built up over recent years, is now gradually being admitted and cleared away, and it is intended that the increased accommodation now available shall be able to meet and keep up with current demand.

One hundred and six rooms of laboratories replace 21 crowded rooms in the old Hospital, providing new impetus for the research which has come to play such an important role in the Hospital's life. Its effective campaign to include Vitamin D in the diet of growing children has completely changed the picture of rickets in Canada; 250 cases of acute clinical rickets of an era 25 years ago has become a medical curiosity, with 4 to 5 cases yearly. From the Hospital for Sick Children laboratories has come Pablum, the first pre-cooked infant cereal, furnishing adequate amounts of minerals and vitamins, in addition to calories. As a result of research in these laboratories, early in World War Two, Canadian prisoners-of-war food parcels supplied by the Canadian Red Cross and armed forces rations, were judged the most satisfactory of those used during the last war. From the Hospital for Sick Children pasteurizing plant have come results which influenced Ontario to pass its 1938 Pasteurization Law, leading the way for similar law enactments throughout the country and, indeed, throughout the world. At the Hospital for Sick Children many surgical techniques of international reputation have been developed; operations such as those which end the scarring of harelip, and the crippling misery of clubfeet; methods of dressing burns to decrease suffering and greatly minimize scarring.

HISTORICAL

The first Hospital for Sick Children was opened March 1, 1875, in a ten-room house at 31 Avenue St., on the site of the present Toronto General Hospital. Its opening was largely the result of the efforts of Mrs. Samuel MacMaster, the founder of Moulton College for Girls, and the wife of the founder of MacMaster University. During the first year, 111 patients were treated.

Since the very first, the Hospital for Sick Children story is one of need, demand, and growth, the former two conditions always creating the latter. Overcrowding became a problem after the first month of operation, a problem that was solved, temporarily at least, by the Hospital's move, in June 1876, to 206 Seaton St.

Still the flow of patients increased. Generous citizens made possible the next move, in May 1878, to 245 Elizabeth St. In this new Hospital, the first Superintendent, and the first House Surgeon were appointed. A telephone was installed in 1882. In 1884, a school for nurses, a school for the children, and an orthopaedic workshop were instituted.

The Hospital soon proved unsatisfactory. Crowding was desperate, and in August 1886, new beams which had been constructed to support the sagging building began to give away. A move was imperative. In October 1886, a building at 90 Jarvis St. was converted to Hospital for Sick Children use.

Torontonians had developed an active interest in the Hospital by this time, an interest which has been maintained ever since. John Ross Robertson, founder and publisher of the Toronto Evening Telegram, was one of the foremost lay-

leaders at this time. Under his impetus, guided by his wisdom, and materially aided by his willpower, money, and vision, the College St. building was erected in 1892. This new Hospital contained 190 beds, and was described, in an historical review of the time, as ". . . a palatial structure, the most perfectly equipped children's hospital in the world, the great mother hospital of the Dominion. . . ."

Soon, even the new Hospital was not big enough. Increased demand for accommodation was met by such expansion as the site would allow, and by the crowding of existing facilities. By 1928 the Hospital, with 300 beds, was completely filled all the time, and was handling 5,000 in-patients annually; in 1949, still in the same building, and with only a slight amount of additional space, it was handling 13,000 in-patients annually. Fortunately, the advent of antibiotics and the sulpha drugs, together with improved medical knowledge, had permitted the average daily stay per patient to drop from 20 days in 1928, to 12 days in 1949. Still the Hospital was hopelessly and dangerously overcrowded; its facilities badly taxed.

FINANCING AND CONSTRUCTION

First plans for a new Hospital for Sick Children were begun in 1928. Then the depression came, and the plans had to be shelved. By 1938, Canada was enjoying a period of relative stability; plans were begun again. The threat of war and, eventually, war itself interrupted. Thoughts of a new building again had to be put aside; the staff continued, as it had for so long, making the best of existing conditions.

With the end of the war in sight, plans for expansion were actively revived. Enthusiasm grew, and on V-E Day in 1945, the first campaign for funds was begun. The objective of $8,000,000 was raised.

Booming building costs soon made necessary certain changes in the plans for the new Hospital. It was decided that all the essential features must be kept, that nothing should interfere with the services which, from the onset of planning, the new Hospital had been intended to provide. The most economical type of construction was used, and practically all stone work was eliminated. The Hospital was reduced from 17 floors to 14, and the building was spread out more, giving fewer outside rooms but cutting the cost of construction considerably. Service areas were compressed into the centre of the building, and all areas outside of patient areas were reduced to a minimum. Despite this material economy, more money had to be raised. A second campaign for $4,000,000, held in 1949, was oversubscribed by $500,000.

HOSPITAL PLANNING

Twenty-five years has been a long time to wait for a desperately needed new Hospital for Sick Children, but the wait of many years has assured that the Hospital has been well planned. The Hospital is the product of collaboration between architect, administration and every branch of the Hospital's organization; provision has been made for everything the medical profession needs or is likely to need. Hospitals all over the world were visited during the period of planning. Ideas were brought back and carefully considered; some of these ideas were dropped when better ones presented, others were retained and often

improved. Population trends were carefully studied in deciding the size of the new Hospital; notwithstanding, provision was made for future extensions to the building, using the present foundation, should the need arise. Dummy sets were made to enable doctors, nurses, and architects to work out the most efficient and economical working units. More medical supervision for child patients is required than for adults; step-saving planning was a highlight in the designing of the Hospital all the way through. Special beds were designed and made. A children's hospital must be very flexible; seasonal disease, the differences in ages as well as the differences in the sexes af the patients must be considered. The Hospital for Sick Children was carefully planned with such factors as those in mind. Ultraviolet light barriers, the result of 12 years of Hospital for Sick Children research, effectively lessen the transmission of disease.

FLOOR-BY-FLOOR TOUR

Entering the Hospital by the Emergency Entrance, we proceed to the Students' Lounge on the floor below. Here, in marked contrast to the facilities of the old Hospital, we see adequate locker space and a washroom. Further along the corridor is the lounge for the ladies. Below the Service Floor is the Basement, where the control room for the extensive mechanical and electrical services is found. Miles of wires and pipes necessary for the operation of intricate equipment find origin here. A section of the Records Department is on this floor.

On the Service Floor are the kitchens providing some 3,000 meals a day, including diabetic and other special diets. A cafeteria for hospital staff and and a visitors' snack bar are close by. The main Records Room is located on this floor. Originating in a section of the Records Room are pneumatic tubes for transmitting records, reports, prescriptions, and pathology and laboratory specimens to 25 stations in the Hospital. At the south end of the Service Floor is a bathing pool for physiotherapy treatments with a hydraulic elevator to lift crippled children in and out of the water.

The Emergency, Admitting and Out-Patient Departments occupy the greater portion of the Main Floor. At the entrance to the Out-Patients we find parking space reserved for perambulators. Adequate waiting rooms are provided for the many who attend the various clinics. Special clinics, such as the Hard of Hearing Clinic, the Eye Clinic, and Psychological Medicine, are included on this floor. The Dispensary and an X-ray department complete the Out-Patient Department. The Milk Formula Department is located on this floor.

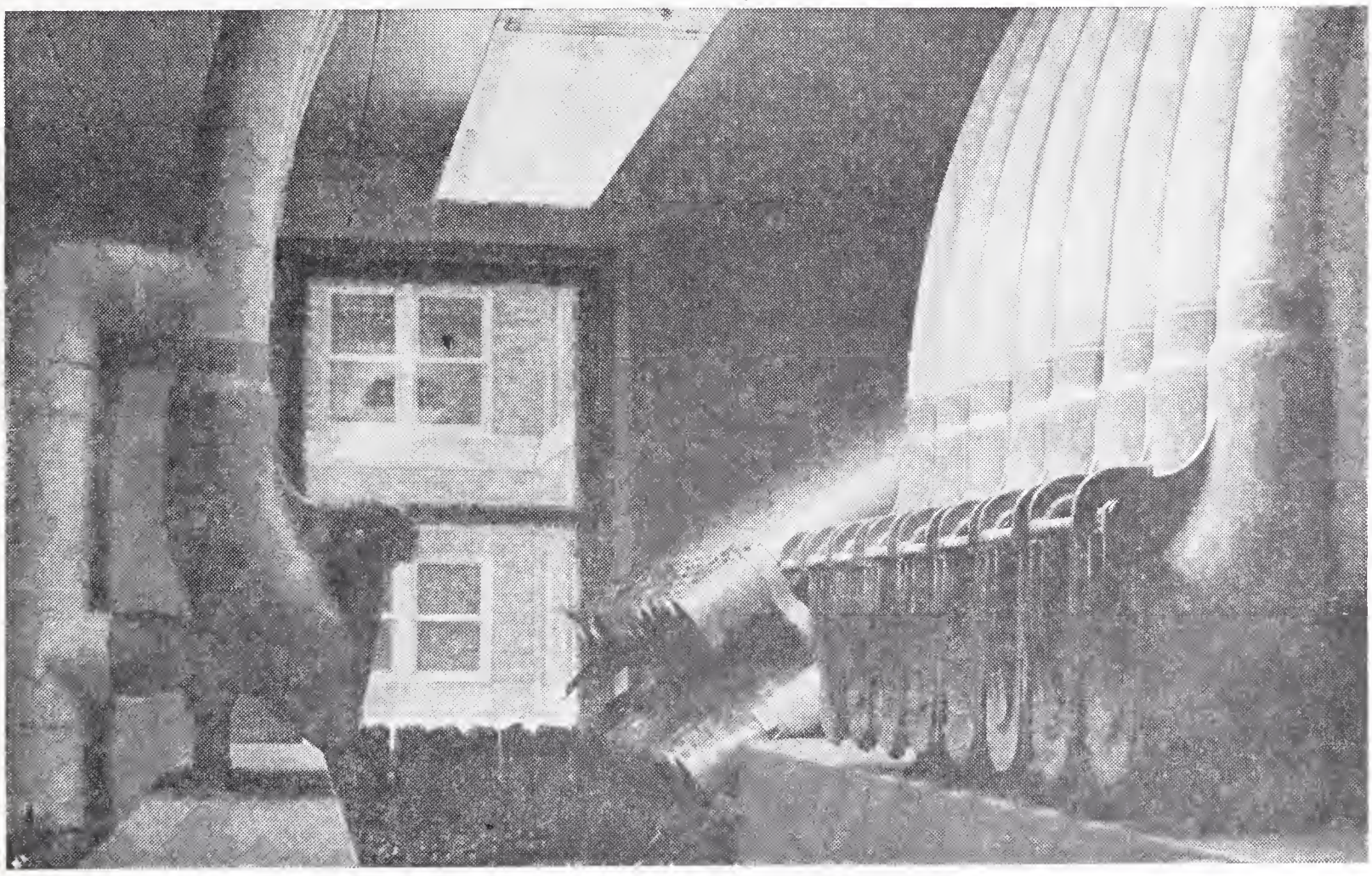
On the Main Floor are the business and staff offices, and the School of Nursing. Students will marvel at the spacious main lecture theatre equipped with comfortable chairs, movie projectors, indirect lighting, and acoustical sound-proofing. At the south end of the wood-panelled main rotunda may be found the John Ross Robertson Memorial Window, first placed in the old Hospital on College Street, and now linking the old with the new. At the right of the window is a small but well-appointed chapel.

Fourteen operating rooms with spark-proof floors, explosion-proof electric fixtures and anaesthetic islands are on the Second Floor at the north end. Equipped

with overhead viewing galleries and two-way communication system, two of the operating rooms will provide excellent facilities for instruction. One of these is further equipped for television. A post-operative recovery room ensures the patient of the closest supervision. The X-ray Department with equipment in lead-lined rooms is located at the south end of the Second Floor. With a large percentage of new equipment, including three multi-plane fluroscopes, it assures excellent diagnosis and therapeutic radiology. Other departments situated on this floor are the Dental Division, Heart and Genetics Departments.

Routine laboratory tests are carried out in the Laboratories on the Third Floor. In the Departments of Virology, Pathology, Bacteriology, Chemistry, and Hormones research on diagnosis, treatment and prevention of disease will be carried on with energetic and hopeful enthusiasm. Here also may be found the Central Supply Department and the switch board.

Patient accommodation begins on the Fourth Floor. Here infants under two years are nursed in individual cubicles. Pre-school children are on the Fifth Foor; older children on the Sixth Floor. On the north side of the Hospital the surgical beds are found; the south side is for medical patients. The largest wards will have only six beds. On each floor are clinic rooms providing adequate teaching space. Viewing corridors make observation possible without entering the ward. Off the ward waiting room is an interviewing room where the parents may be seen privately. On the Sixth



Maclean's Photo by Peter Croyden

Rapid transmission of histories, drugs and small items is effective by means of pneumatic tube system with central integration as shown here.

Floor is a special section called the Metabolic Unit. Equipped with beds, laboratory, kitchen and work space, it will be used in the study of diabetes and other metabolic disorders.

Eye, ear, nose and throat wards and a special section for infectious diseases comprise the Seventh Floor. Complete isolation is ensured on the Infectious Wards by separate isolation. On the Eighth and Ninth Floors are semi-private and private rooms. The private infant section is at the south end of the Tenth Floor. At the north end is the Premature Unit. Conference rooms on the Eleventh Floor complete the tour of the new home of the Hospital for Sick Children, an internationally renowned research and educational centre.

SPECIAL FEATURES

In the 106 rooms of the Laboratories are many interesting sections. In the cold room with the temperature hovering above freezing certain aspects of enzyme research will be carried on. There is a room for work with concentrated acids with fume cupboards with controls on the outside, and a lead table in addition to the usual acid digestion equipment. For the partition of steroids a steroid laboratory has been established. There are separate rooms for routine urinalysis, haematolgy, general chemistry and oxygen determinations of blood. In the Pathology Department are found the Blood Bank and Rh Laboratory. A separate library is provided for the use of the laboratory staff.

Studies in congenital heart disease and rheumatic fever are carried on in the Heart Clinic. This centre was one of the first in the field of angiocardiography. Equipment capable of taking serial X-rays at speeds of up to four per second makes this work possible. For instruction in this field an exhibit of angiograms is provided. In the Pathology Museum there is a special section on congenital heart.

In the Emergency, in addition to examining rooms and a treatment room, there are an operating suite, a plaster room and a fluroscopic room. The expanded facilities of the Out-Patient Department includes class rooms for clinical teaching. In the Hard of Hearing Clinic is the suspended room (a room built inside another) for careful investigation of auditory acuity. In the Department of Psychological Medicine special facilities are provided for the observation of patients.

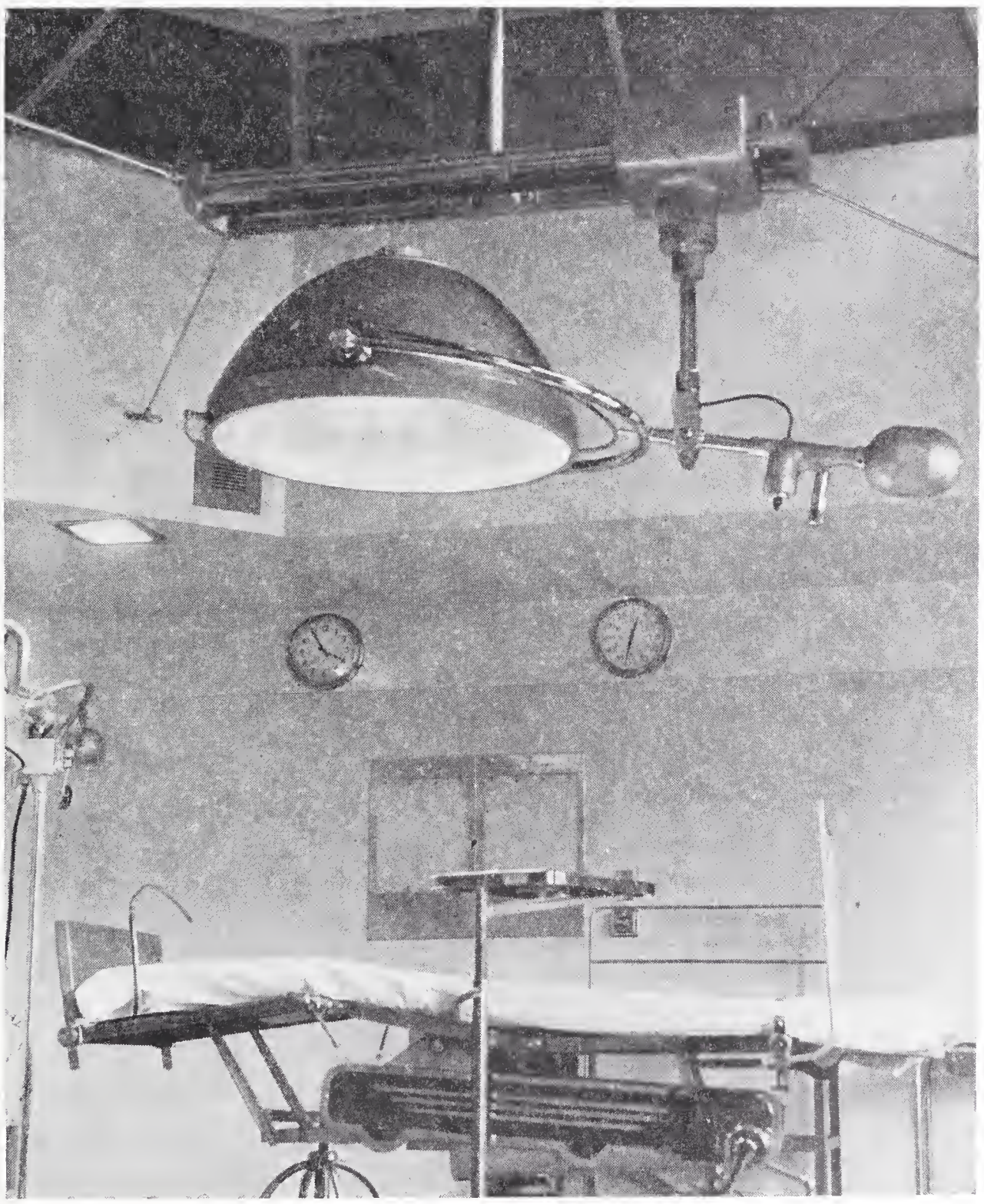
In the Premature Unit there are 25 single cubicles. Each is a complete unit. Ultra-violet baffles aid in preventing cross-infection. Only the nursing staff on duty is permitted in the Unit. An examining-treatment room is provided for the medical staff so that they need not enter the Unit. A central service area decreases walking distance for the nursing staff.

Infant feedings from the Milk Formula Room will number about 2,500 bottles daily. All types of feedings are provided. This centre is unique in that each formula is individually made according to the feeding order of the staff doctor. The new facilities makes possible the autoclaving of the feeding bottles. The unit is in two sections, one dirty, the other clean. In the dirty part the bottles and other equipment are washed and then placed in the two-way autoclave. In the clean part the formulae are made. On one-third of the feedings it will be possible to do terminal sterilization—the other feedings would not withstand this processing. The feedings are then placed

in a two-way refrigerator. This arrangement makes it unnecessary for staff other than those making up feedings to enter the Milk Formula Room. From the office of this department information on feeding is provided for parents and doctors. When an infant leaves hospital, the mother is instructed about the feeding. In addition to this information every infant goes home with a 24 hour supply of feeding.

The Orthopedic Workshop is located in the Elm Street Division. Here craftsmen make shoes, braces, splints and other orthopedic appliances for crippled and deformed limbs. With more working space, improved equipment, and an increased staff this department will provide an increased number of appliances in a shorter period of time. This means more children can be cared for and the waiting period for fittings will be shortened.

These are only a few of the many



Two large operating theatres have observation domes, two-way intercom between operator and onlookers, superb lighting; one will have facilities for television projection.

features which will facilitate in the diagnosis, treatment and prevention of paediatric diseases.

RESEARCH

In the Hospital for Sick Children research work begins with the patient—sick or well—on the ward or in the Well Baby Clinic. The laboratory is used as a tool for finding better methods for diagnosis and treatment. Good results in the laboratory are transferred back to the patient as improved treatment and diagnosis. Many problems are being investigated. Some of these are outlined below.

Various aspects of infectious diseases are under study. One survey is concerned with the incidence of endobronchial tuberculosis. Studies evaluating the effects of new drugs, such as streptomycin, sulphones and certain salicylic acid preparations in the treatment of tuberculosis are being undertaken. For several years poliomyelitis has been the subject of intensive study. A new virus research unit has been set up with ultra-speed centrifuges; this will supplement work on viral diseases in children done at Connaught Laboratories.

In cardiovascular research advances are being made in the diagnosis and treatment of congenital anomalies of the heart. Two techniques employed are cardiac catheterization and angiocardiography. Attempts to obtain an accurate and simplified method of determining the oxygen content of the blood are being made. Recently an intensive international survey into the study of rheumatic fever and its dangerous aftereffect — rheumatic heart disease — has been undertaken. The Hospital for Sick Children will be one of the key centres in this programme, which includes investigations into the use of ACTH and Cortisone.

Research workers will continue studies on the prevention and treatment of dehydration in infants and children. It is pointed out that the child is not a little man, that is to say, children cannot be treated for dehydration on the same criteria as used in adults. Other workers are trying to correlate the clinical course and dietary histories of babies who die of severe infections, such as intestinal intoxication, with the postmortem liver findings. The influence of lipotrophic factors on the state of the liver in babies with severe intestinal intoxication is being investigated.

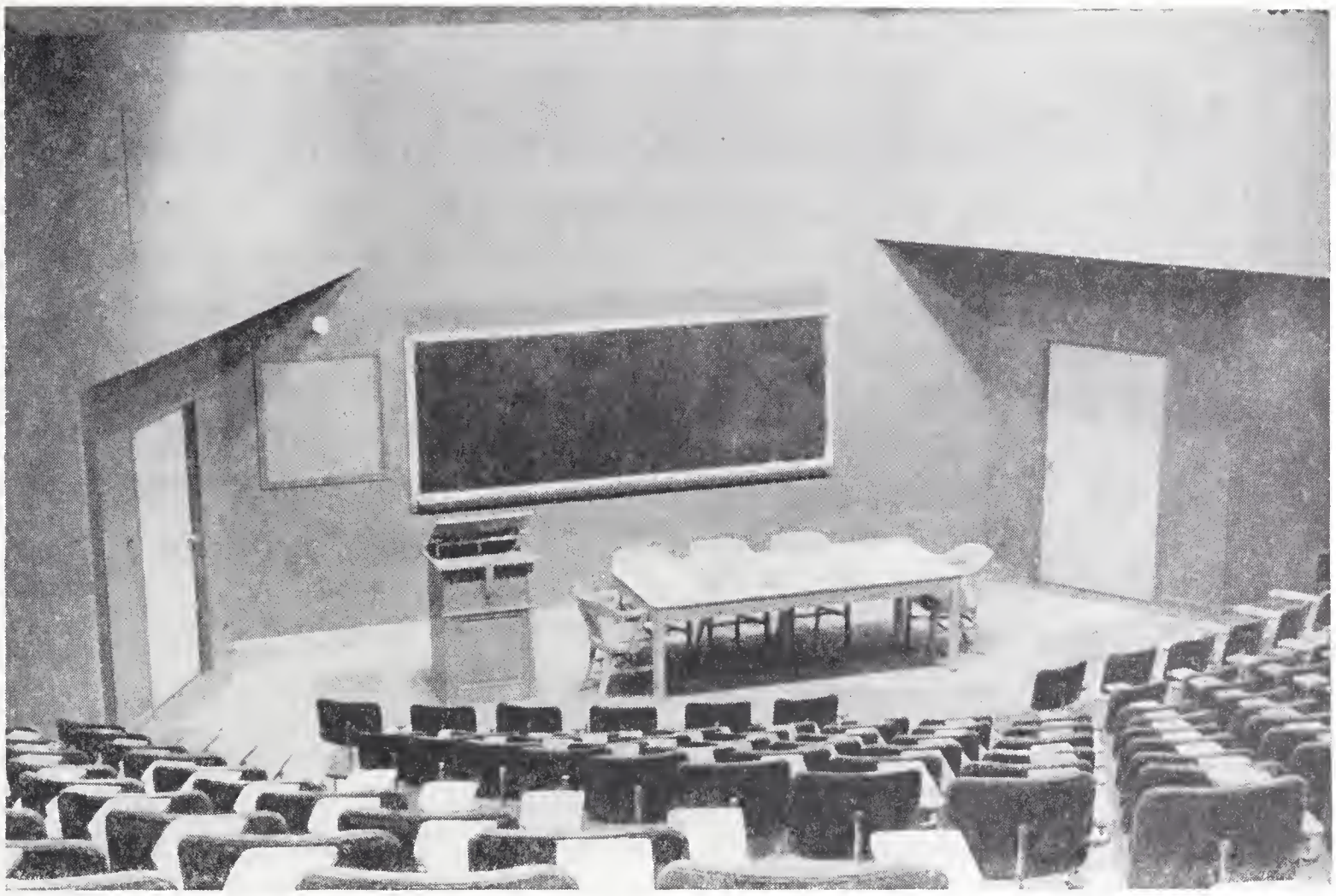
In this leading centre in nutritional and digestive research, investigators are studying coeliac disease and fibrocystic disease of the pancreas to determine the aetiology of these diseases and their specific therapy.

Problems of heredity are under study in the Genetics Department. The inheritance of hair lip and cleft palate, hypertrophic pyloric stenosis, Rh blood factor, are only a few of the studies being made or planned.

TEACHING FACILITIES

Almost 75 per cent of the paediatricians practising in Canada have taken postgraduate training at the Hospital for Sick Children. This is an interesting reflection on the impressive teaching role which the Hospital plays. This figure does not include those paediatricians, trained at the Hospital, who are now practising in the United States and elsewhere throughout the world.

There is a close connection between the Hospital for Sick Children and the Faculty of Medicine, University of



Splendid illumination, ventilation and acoustics are featured in lecture theatre for 270. Padded seats have individual ash-trays.

Toronto. Over the years, more than 4,500 medical students have received their paediatric instruction at the Hospital. It is interesting to look back through historical records: Section VI of the Act of Incorporation of the Hospital, July 6, 1891, is concerned with undergraduate teaching, and includes such regulations as: ". . . Any student of medicine on paying $6.00 shall receive a ticket enabling him or her to attend the clinics of the Hospital for a period of six months . . . the students shall enter the operating room by the rear entrance from Elizabeth St. or Mission Ave. . . . they shall behave with decorum in the hospital. . . ."

There is a vast difference in the facilities for teaching in the present Hospital, and those which were obtainable in the College St. building. The ultra-modern lecture theatres, the clinic rooms contained in each wing of the Hospital and throughout the Out-Patient Department, the observation-dome operating amphitheatres, the special viewing corridors, the undergraduate common room, and the modern interne quarters are just a few of the conveniences which past generations of University of Toronto medical students will envy.

DERMATOLOGICAL PROBLEMS IN CHILDREN

NORMAN M. WRONG, M.D.

THE DIAGNOSIS AND TREATMENT of skin eruptions in infants and children play an important part in the practice of every general practitioner and paediatrician. It is said that skin eruptions account for 15-20 percent of the practice of the average general practitioner. It is possible that this percentage may be higher if practice is limited to diseases of children.

It is essential that most of the skin problems should be handled by the general practitioner or the paediatrician and only those cases referred which present special problems in diagnosis or therapy. It is obvious that anyone who is handling infants and children must have a good working knowledge of dermatology. The better and wider his knowledge of dermatology becomes, the better will he care for those for whom he is responsible.

It is difficult to obtain figures as to the commonest skin diseases of children which are seen in the average office in private practice. It is not comparable to judge the cases seen in a skin clinic in a children's hospital and yet these are the only figures which are easily available. About one year ago Dr. R. C. Smith of the dermatological staff of the Hospital for Sick Children, Toronto, surveyed the new admissions to the Skin Clinic for the year 1948.

There were six hundred and sixteen patients seen in the Skin Clinic during this time and the table below lists the ten commonest diseases encountered with the percentage of each of the total number.

DISEASE	NUMBER OF CASES	PERCENTAGE OF TOTAL
1. Scabies	101	17%
2. Impetigo	97	16%
3. Haemangiomas	65	11%
4. Contact Dermatitis	41	7%
5. Ringworm of Scalp	34	5%
6. Common Warts	32	5%
7. Pyoderma	21	3%
8. Atopic Dermatitis (Eczema)	19	3%
9. Seborrhoeic Dermatitis	16	2%
10. Plantar Warts	14	2%
	440	71%

Ten of the commonest diseases account for four hundred and forty patients or 71 percent of the total. The diseases listed here do not give an accurate cross-section of the skin diseases seen in the Hospital for Sich Children, however, because patients with atopic dermatitis (eczema) are admitted to the general medical clinic and treated there or in the allergy clinic, so that the figure of 3 percent for this disease is lower than it should be.

The figure of 11 percent for haemangiomas is much higher than would be seen in private practice because patients with these tumours are referred to the hospital from all over the province. The incidence of ringworm of the scalp varies greatly from season to season, from year to year and from city to city, from a low of the sporadic case to a high of an epidemic such as is now raging in Sault Ste. Marie.

Assistant Professor of Medicine.

With these exceptions, however, it is possible with a working knowledge of ten of the commonest skin diseases, to handle satisfactorily 70-80 percent of skin patients seen in private practice. Some of the others may have to be referred for specialist opinion but if that were not the case, the outlook for the practising dermatologist would be indeed grim.

The following is a brief description of the problems and pitfalls in the diagnosis and treatment of the ten common diseases.

Scabies

This disease is comparatively easy to diagnose in the uncleanly, but more difficult in those who bathe frequently. A history of more than one member of the family affected should always raise one's index of suspicion towards parasitic diseases especially scabies. The treatments of choice are still Sulphur Ointment and aqueous emulsion of Benzyl Benzoate. After a correct diagnosis, results depend entirely on the care with which the physician instructs the parent as to the procedure of treatment and the care with which the parent carries out these instructions.

Impetigo

This disease is not usually difficult to diagnose but may be difficult to treat because underlying diseases are not recognized or because therapy irritates the skin or fails to control the infection. In impetigo of the scalp always consider the possibility of an underlying pediculosis. In widespread impetigo of hands, trunk, genitals, buttocks and legs, always consider the possibility of underlying scabies.

Treatments are many and varied and usually fairly effective. The new antibiotics in ointment form such as Bacitracin and Aureomycin are very effective but expensive. Vioform 3 percent in ointment form is effective but stains clothing and bedding. Penicillin ointment is moderately effective but does not affect 20 percent of *Staphylococcus pyogenes* infections and in addition, may cause dermatitis. Sulphonamide ointments are moderately effective but while they rarely cause dermatitis in infants and young children, do so with increasing frequency in older children. It is probably unwise to take the risk of sensitizing children to penicillin and sulphonamides by local use when they may be required as life-saving procedures for systemic infections later.

Haemangiomas

Several hundred patients with these tumours have been seen in the Skin Clinic at the Hospital for Sick Children in the past ten years and the following conclusions are drawn from careful consideration of these cases over a period of years.

(1) It is true that these tumours will disappear spontaneously in many cases but when one is confronted with an individual patient who has a haemangioma at the age of three months, it is impossible to say whether it will regress, remain stationary or suddenly grow rapidly. For this reason these tumours are better treated in the first few months of life if the infant's condition warrants it.

(2) Most of the tumours disappear with good cosmetic result if the infant is treated before the age of six months.

(3) Haemangiomas which are not too deep or thick and elevated respond

well to carbon dioxide snow therapy.

(4) Deep, thick tumours should be treated by superficial radium plaques, by interstial radon seeds or by excision. Good results have been obtained in other centres by the injection of sclerosing substances but the method has not been used in this clinic.

(5) If the tumours are not treated, they should be observed frequently and treated at once if rapid growth is observed.

(6) Not one case of carcinoma developing in these tumours has been observed.

Contact Dermatitis (Dermatitis Venenata)

This disease is not nearly as common in the infant and child as in the adult. There are two reasons for this. The first is that the child's skin is not easily sensitized to substances which commonly cause dermatitis in the adult. The other reason is that the infant and child is not exposed to the multiplicity of sensitizing agents to which the adult skin is exposed such as cosmetics, soaps and cleansing agents in the female and occupational hazards in the male. One of the commonest contact irritants in the child is strong treatment. The treatment of acute eczema and dermatitis with strong, irritating remedies frequently adds a factor of contact dermatitis to the existing disease. Possibly the commonest contact irritants are soap and water—the strongest (most alkaline) soaps being the worst offenders as they remove the protective mantle of oil from the skin. Another common irritant is ammoniacal urine in the diaper. A careful history and examination of the patient will usually reveal the offending irritant. The removal of this and the application of a soothing ointment or lotion results in a rapid improvement in the eruption.

Ringworm of the Scalp

This disease, like small-pox, is forgotten by the laiety and almost forgotten by the medical profession until it occasionally bursts forth in epidemic form. There are two fungi commonly responsible both of the microsporon family. The one, *M. canis,* is transmitted from young cats and dogs to children and never results in epidemics although it may cause infection in several members of a family. The other type, *M. Audouini,* is transmitted from child to child and is always the cause of epidemics. It never affects the adult scalp and dies out spontaneously at puberty.

Both of these fungi cause partial baldness due to the hairs breaking close to the scalp and may cause inflammatory change. This is more likely with *M. canis*. Examination of the scalp under Wood's light reveals typical fluorescence in both. Various fungicides such as Iodine, Sulphur, Undecylenic Acid and propionic acids and their salts will cure a large percentage of infections caused by *M. canis* but rarely cure *M. Audouini* infections. Epilation of scalp hair by means of X-ray is the only satisfactory method of curing *M. Audouini* infections but this becomes technically impossible in large epidemics. It takes a trained radiologist at least two hours to give a depilation dose of X-ray to a child's scalp. If the child is too young or is nervous and apprehensive, this procedure becomes impossible.

In order to attempt to control epidemics it is essential that the medical officer of each community should have available Wood's lamps to examine all contacts when ringworm of the scalp is diagnosed. It is impossible to diagnose the disease clinically in many cases of *M. Audouini* infections. Infected cases should be excluded from school until they are cured which is a great hardship to the infected child but is a necessity to the community.

Warts—common and plantar

The wart is an example of a benign tumour caused by a virus. The inclusion bodies in the epidermal cells and the virus itself have been photographed under the electron microscope. To date there is *no* substance which acts to destroy the virus of warts and this includes the recent antibiotics. Until such time as an anti-virus is found, the treatment of warts of all kinds remains a hit-and-miss affair exactly as the treatment of anterior poliomyelitis. When there are one hundred treatments for any disease, none are of much value and this is true of warts. It must be remembered that warts disappear spontaneously perhaps due to the development of immune bodies in the host. Warts are common in the child, less frequent in the young adult and rare in old age which also probably means the development of immune bodies in older people. There is no space or necessity here to review all the treatment of warts. Suffice it to say that in consideration of any treatment, none should be used which will cause severe scarring or permanent damage to the skin because warts are always benign and frequently disappear spontaneously even after being present for months of years. The only type of wart for which there is any specific therapy is the so-called venereal wart. These are warts which are on the penis, vulva and perianal areas and are always moist. In these lesions, two or three applications of Podophyllin Resin, 20 percent in alcohol, will usually bring about a dramatic cure. Podophyllin resin is ineffective against common and plantar warts.

Pyoderma

This term means infection of the skin with pyogenic organisms, usually *Staphylococcus pyogenes* and *Streptococcus haemolyticus*. Impetigo is one example of pyoderma and this disease has already been discussed.

The term is frequently used by dermatologists when the disease is not a classical impetigo or when eczema or seborrhoeic dermatitis are secondarily infected with pyogenic organisms. The treatment is the same as for impetigo.

Atopic Dermatitis (Eczema)

Coca coined the term "atopy" which means "strange" and atopic dermatitis is indeed a strange disease. It is often associated with allergic diseases in parents or siblings or other allergic diseases in the child. The term "allergy" coined by von Pirquet, is probably the most over-used and abused word in medicine today. It means "altered reactivity" and is not a diagnosis. Indeed it is probably used to cloak ignorance more than any other word. In this way it is comparable to "salt rheum" and "humours" of previous generations.

In atopic eczema of infants, the first skin manifestation is a wheal or an erythematous plaque. As a result of rub-

bing and scratching the infant quickly transforms this into an eczematous eruption manifested by redness, thickening of the skin, weeping, crusting and scaling. In some cases the infant has a sensitivity to food recently added to the diet such as wheat, eggs, milk, orange-juice, cod-liver oil, pablum, etc., but in many cases the specific antigen is never found. If removal of the suspected food results in a clearing of the eruption and recurrence on again administering this food, it is extremely suggestive evidence particularly if this procedure is repeated twice. Too often, however, the "post hoc ergo propter hoc" reasoning prevails and an important article of food such as milk is removed from the patient's diet, the patient improves, and is then labelled as milk-sensitive and the fond mother refuses to give the child milk for months or years, thus depriving it of an essential food. There should be conclusive evidence before one of the essential foods is removed from an infant's diet.

As far as topical management of infantile eczema is concerned, the following are important.

(1) Avoidance of soap, water and wool next the skin as these are mechanical irritants. Bland oil can be used for cleansing.
(2) Prevention of rubbing and scratching by mechanical means—splinting of arms, restraint jackets and the covering of the skin with old linen.
(3) Prevention of sudden changes in humidity and temperature.
(4) The application of Crude Coal Tar in ointment or paste form.

When the antihistaminics were first introduced, great things were hoped for them in therapy. By and large, they have proved very disappointing both by mouth and as topical applications in the control of eczema. Occasionally they help to control itching.

Theoretically, A.C.T.H. and Cortisone should be of great benefit in atopic dermatitis. There is sometimes a dramatic temporary improvement but this is usually followed by a relapse even with the continued administration of the hormone.

It is my opinion that cases of atopic dermatitis in infants and children should be handled by their paediatrician or family physician and should be under the care of an allergist or dermatologist for special procedure only.

Seborrhoeic Dermatitis

It is probable that this disease occurs in mild form in infants and children more often than is suspected. In infancy the earliest manifestation is cradle cap. If the thick scaling persists on the scalp it is not uncommon to find indefinite greasy scaling in the eyebrows, on the sides of the nose, ears and neck. Later the axillae, cubitals, naval and groins may be affected.

Although there is no proof that this disease is communicable, it is common to find that one (or both) parent has severe dandruff when the infant is affected.

This disease may be aggravated somewhat by a diet high in fat and carbohydrate and may be improved somewhat in some cases by a reduction in these foods, but there is no true sensitivity to foods in this disease and drastic dietary measures are not warranted.

Sulphur, Salicylic Acid and Tar have always been the drugs of choice for topical application in seborrhoeic dermatitis and they are still the best. They are usually administered in ointment or

cream form and should not be strong enough to irritate the child's skin. Ultraviolet light in small repeated doses sometimes helps but is inferior to sunlight.

In conclusion, it should be stressed that history, physical examination, common sense and experience are the most important factors in diagnosing and treating skin diseases successfully. Elaborate paraphernalia and tests are unnecessary in the vast majority of cases. The child's own physician can handle satisfactorily most of the skin eruptions which may appear.

NEW RADON PLANT IN ONTARIO TO AID CANCER CONTROL

An increased demand for radon to treat cancer in Ontario has necessitated the establishment of a new and enlarged radium emanation plant in Toronto.

Radon is a short-lived, radioactive gas given off by radium and is extensively used in the treatment of cancers near the surface of the body. Use of radon reduces the amount of highly-expensive radium required for a cancer control program.

For some years radon seeds have been prepared in a radium emanation plant in the McLennan Laboratory of the University of Toronto. This installation was designed to operate where not more than 300 milligrams of radium are stored.

Public health authorities have found that at least 1,000 milligrams of radium, or more than double the amount presently in use, are needed to meet the requirements of cancer clinics and private physicians.

Accordingly, a new radon plant capable of handling a larger quantity of radium is being fitted out at the Christie Street Pavilion. The federal and provincial governments are splitting the costs, estimated at about $18,000.

Extensive precautions are being taken to eliminate health hazards to persons working in the new plant. Protective clothing and special washing facilities are being provided; lead glass protective barriers are being set up; and the radium solution itself is to be contained in a heavy lead safe. Special equipment is being installed to detect any radioactive contamination caused by escaping radon and solid radium decay products.

Development of the new radon plant was carried out at the suggestion of the university authorities and scientists from Chalk River.

(Release by the Minister of National Health and Welfare, Hon. Paul Martin.)

TUMOURS OF INFANCY AND CHILDHOOD*

POTENTIALLY FATAL NEOPLASMS

R. R. TASKER, B.A., 5T2

CANCER IS NOT A COMMON affliction of infants and children. It accounts for only 0.06 to 0.2 per cent of all admissions to children's hospitals and only 2 per cent of the total number of cases of malignant disease in all age groups. As a cause of death in infants and children, however, it has come to occupy a place, next to accidents, at the top of the list. This has been due mainly to increasing success in the control of infectious disease (Table I).

TABLE I

DEATH RATE IN MASSACHUSETTS UNDER FIFTEEN YEARS

	1915	1939
Cancer	1.6	4.2
Pertussis	28.5	4.0
Tuberculosis	20.0	2.7
Measles	14.2	1.5
Diabetes	3.8	0.9
Mumps	9.4	0.9
Scarlet fever	16.4	0.7
Syphilis	9.6	0.7

DIAGNOSIS

The early diagnosis of cancer in infants and children is of course essential to successful treatment. This is, nevertheless, most difficult especially in the pre-school child where the most cases, the most curable types, and the least medical supervision is found. Dargeon points out that any one of the following may be an indication that the patient has a tumour:

1. Changes in the general or local pattern of growth.
2. Changes in temperament, behaviour, intellect, disposition, or socal adjustment.
3. The undiagnosed disorder.
4. The unusual persisting symptoms.
5. The non-regressing traumatic lump.
6. The non-traumatic silent lump.

TYPES OF CANCER

The types of cancer found in infants and children differ from those found in the adult. Although almost any malignant neoplasm that has been described has been reported in children, still the common cancers under the age of 14 are not the common ones found in the adult, and *vice versa*. To illustrate, Wilms' tumour and neuroblastoma are almost unheard of in the adult, and sarcoma is far commoner than carcinoma in the child, while in the adult the reverse is the case. And, although intracranial tumours and lymphatic tumours are equally common in both age groups, the individual neoplasms differ markerly. It is about the ages of 13 - 16 that the adult forms of cancer begin.

Children's cancers can be divided into six main groups as the following table shows.

The composition of the various series from which table II was composed varies widely according to the interests of the centre reporting. It seems likely that the

*Adapted from papers presented to the January, 1951, meeting of the Alpha Chapter of Ontario of Alpha Omega Alpha.

true figure for lymphatic cancer is closer to 50 per cent of the whole than the 16.9 per cent quoted.

TABLE II

PER CENT COMPOSITION OF 5,000 CASES OF MALIGNANT DISEASE IN INFANTS AND CHILDREN

Malignant neoplasms of the central nervous system	20.0%
Malignant neoplasms of bone	19.9
Malignant tumours of the lymphatic tissue	16.9
Malignant tumours of the Genito-urinary stysem (and adrenal)	13.3
Malignant tumours of eye and orbit	11.3
Soft tissue sarcoma	7.6

Wilms' Tumour

With this overall picture in mind let us consider the individual tumours in more detail. Of cancers of the genito-urinary system, those occurring in the kidney are the most important. And Wilms' tumour is the chief of these. This is the commonest individual cancer occurring in children, comprising 15 - 50 per cent of all children's cancers according to various series. It has been reported from birth to 70 years of age but is typically seen at 2 - 3 years. The sex incidence is identical and the two kidneys are equally affected. The tumour is occasionally bilateral.

Clinically, it is usually recognized about 2½ months after the first symptoms and signs appear. These consist of an anterior or lateral abdominal swelling usually with the presence of a visible or palpable abdominal tumour which grows rapidly. Pain, occurring in about half the cases, is the only other noteworthy point. On physical examination, an abdominal mass is felt. This is usually about the size of a child's head, non-tender, immobile, smooth, rounded, and solid. Hypertension is usually present and may disappear with nephrectomy. The relation to the presence of second-aries is uncertain and an attempt to demonstrate a pressor factor in the tumour failed. Pyelography, by the retrograde method only if the intravenous or intramuscular methods fail, will disclose a displaced distorted renal pelvis and calyces and should establish that the opposite kidney is present and normal. Punch biopsy is definitely contra-indicated for fear of dissemination of the tumour cells. In making the diagnosis, hydronephrosis, pyonephrosis and neuroblastoma are the chief lesions to be ruled out.

The aetiology of Wilms' tumour is interesting. It is thought to be derived from the renal blastema and to develop by metaplasia, or else to arise at any stage in the development of the kidney from the urogenital ridge to the renal blastema, depending on the degree of differentiation shown in the tumour. In the light of such theories it is thought that most of the other renal tumours of childhood are related to the Wilms' tumour: such as quiescent patches of fat or cartilage, nodules of fibromyoma, teratoma, carcinoma, adenoma. In support of this idea are the occasional reports of the finding of abortive glomeruli in renal adenomata and adenocarcinomata.

In the gross, Wilms' tumour is usually about the size of a child's head, located at the lower renal poles and contained in the renal capsule which may be ruptured. It is roughly spherical, lobulated, and in section, opaque, glistening, pink and grey with patches of haemorrhage and necrosis. Under the microscope, the essential features are isolated tubules of high columnar or cuboidal cells set in a mass of undifferentiated spindle cells which may form primitive glomeruli. Squamous epithelial nests, smooth or

skeletal muscle, fat, cartilage and bone are also frequently found. Any one of these tissues may be the main component of the tumour. The metastases are usually masses of round cells but a secondary in lung composed only of striped muscle has been reported.

The spread of this tumour is largely by direct invasion. It bursts through the renal capsule that has been stretched to contain it and grows into the kidney, renal pelvis, renal hilus, renal vein, duodenum, and any other nearby structure. Spread in the blood stream is infrequent and late and usually involves the lung, liver and brain. The bones are rarely invaded.

The treatment is controversial, but the method of choice appears to be nephrectomy, as soon as possible, by the transperitoneal approach followed by postoperative irradiation of the abdomen, chest and skull. Preoperative irradiation has been accused of causing a 2 - 3 week delay in operation and of aiding in the dissemination of cancer cells. However, strange as it may seem, cures have been reported after radiation alone and the radiation of secondaries after the excision of the primary has resulted in cure.

Nevertheless the outlook is not good. Without treatment the average duration is ½ - 1½ years, with some cases surviving 10 - 16 years. Following operation and radiation various authors report 5 - 55 per cent cures with an average of 12 per cent. In one series radiation alone cured 5 out of 20 cases. It appears that a 2-year survival after treatment usually means a permanent cure.

Genital Tumours

Other genito-urinary tumours of infancy and childhood are not common but those found in the ovary are very interesting. Ovarian tumours make up one per cent of children's cancers. Of these 45 per cent are teratomata and dermoid cysts, 30 per cent simple cysts, 10 per cent cystadenoma and cystadenocarcinoma, and the rest granulosa cell tumour and dysgerminoma. The cystadenomas occur near puberty and are similar to the tumours in the adult. The dermoid cysts and teratomata are commonest at 5 - 10 years; 3 per cent of the former and 65 per cent of the latter become malignant. Their aetiology is of interest: one school considers that they arise from isolated host blastomeres in which case they are of the same generation as identical twins and monsters such as epignathus. Thus a continuous series can be traced from identical twins through these monsters to teratomata. Others think that teratomata arise from sex cells of the host by parthenogenesis. Still others believe that these tumours arise from the host's undifferentiated mesenchyme. Dysgerminomas are commonest between the ages of 10 and 30 and it is an amazing fact that one-third are bilateral. They may be associated with pseudohermaphroditism and genital hypoplasia.

Granulosa cell tumour may occur at any age, is occasionally bilateral and 5 - 25 per cent are malignant; they result in precocious puberty

Cancer of the testis was reported as comprising 2 - 8 per cent of all cancer in children before 1900; most of the cases were said to be teratoma. In the 20th century, however, it has rarely been reported and the cases are usually described as adenocarcinoma.

Prostatic sarcoma, though rare, has been reported numerous times in chil-

dren. All types of sarcoma occur and the prognosis is very bad.

Myosarcoma of the vagina need only be mentioned.

Sympathetic Nervous System Tumours

These are best approached from an embryological viewpoint. In the early stages of development the neuroblasts migrate from the neural crest along the nerve roots. They then divide to form sympathogonia. These resemble lymphocytes but form imperfect rosettes. They invade the adrenal anlage, settling in the definitive medulla, and also take up their positions at the site of future sympathetic ganglia. Differentiation into sympathoblasts occurs next, These new cells are larger, have more cytoplasm, and show a vesicular nucleus. They arrange themselves in rosettes containing fibrils that stain with silver. The final differentiation is into ganglion cells and chromaffin cells. Any one of these cells may give rise to a neoplasm at any cell station in the sympathetic nervous system but almost all of them are found in the adrenal medulla. The following classification is offered.

(1) SYMPATHICOBLASTOMA OR NEUROBLASTOMA
   (a) Undifferentiated — contains only sympathogonia.
   (b) Differentiated—
      (i) contains sympathogonia and sympathoblasts.
      (ii) contains sympathogonia, sympathoblasts, and ganglion cells.
(2) GANGLIONEUROMA
(3) CHROMAFFINOMA

The SYMPATHICOBLASTOMATA behave in the same manner regardless of their histology and therefore will be considered as one tumour. Also, as already pointed out, since the adrenal medulla is by far the commonest site, the following discussion will apply largely to them.

This group of tumours was considered to be sarcomatous or lymphomatous in origin until Virchow, in 1863, suggested that they were gliomata. From that time until 1891, when Marchand pointed out that they resembled the developing sympathetic nervous system, the picture was confusing. It remained for Wright, in 1910, to completely clarify their origin; he named them "neuroblastoma." It is believed that primary adrenal sarcoma does not occur.

NEUROBLASTOMA is the second commonest cancer in children, constituting 12 per cent of the total. It has been reported in the foetus and at the age of 70, but it is most often found in children about 2½ years of age. Both sexes and both adrenals are equally afflicted; it may be bilateral and multiple foci have been reported.

The first indication of the presence of the tumour may be the discovery of swelling of the upper abdomen with the presence of a visible or palpable mass. But in many cases the appearance of metastases are the first signs of trouble. These cause the appearance of lumps on the skull, ecchymoses of the eyelids, proptosis and auricular swelling. On physical examination a hard, irregular, nodular, non-tender, abdominal mass may or may not be felt. Lumps on the skull are non-tender, attached to the bone, and grow and multiply rapidly. An enlarged liver due to secondary tumour may be found. Secondary anaemia, intermittent fever, and an elevated intracranial pressure are common features. A flat plate of the primary often shows calcification, and X-rays of the

secondaries in bone show rarifaction and a "sun-ray appearance." The association of primary adrenal tumour with secondary involvement of the liver is known as the Pepper syndrome, while the combination of a primary adrenal tumour and metastases in the skull, especially in in the orbit, is called the Hutchinson syndrome. But statistics definitely do not support the claim made by some that the Pepper syndrome indicates the presence of tumour in the right adrenal and the Hutchinson syndrome a tumour in the left. In making the diagnosis the important lesions that may resemble neuroblastoma are Wilms' tumour, leukaemia, lymphosarcoma, Ewing's sarcoma, adrenal cortical tumour, ovarian tumour, scurvy and chloroma.

When the abdomen is opened, a tumour varying in size from that of a cherry to a mass filling the whole abdomen is found. It is smooth, nodular, spherical, soft, encapsulated and located at the upper renal pole. In section it is smooth, pink, with areas of yellow necrosis and haemorrhage and the occasional cyst. Microscopically, the appearance varies with the type of tumour. The undifferentiated ones contain masses of cells resembling lymphocytes with numerous mitoses, arranged in irregular alveoli; rosettes are not seen but balls of cells may be found. The more differentiated tumours without ganglion cells show the above features plus sympathoblasts, some of which are arranged in perfect rosettes with central fibrils. When ganglion cells are present these are found as encapsulated localized areas of typical ganglioneuroma; the rest of the tumour consists of the above features. Metastases consist mainly of sympathagonia with few rosettes or fibrils.

Neuroblastoma spreads early and widely. The chief method is direct extension to the liver, kidney and other nearby organs. Next comes lymph spread up and down the posterior body wall to the skull and pelvis, with invasion of the liver and thoracic duct. Haematogenous spread is the least common, involving the liver and bones. The skull and ribs are mainly affected and to the same degree. In the skull the diploe are invaded; then the tumour cells break through the tables and spread subdurally and subperiosteally to form bosses on the skull. This accounts for the increased intracranial pressure. The orbit is commonly involved. Long bones are not examined thoroughly at autopsy; nevertheless they are found to contain metastases in ½ as many cases as the skull.

Early excision with postoperative radiation is the best therapeutic measure available. Inoperable cases should be radiated.

As might be expected from the above discussion, the prognosis is very poor, being worse in the younger patients. The outlook cannot be correlated with the histological picture. Untreated cases last 3-20 weeks while, following treatment, 5-25 per cent cures have been reported. On the other hand spontaneous cures have been recorded. Cushing and Wolfback reported a proven case in an infant from whom the tumour was removed 10 years later and found to have matured to ganglioneuroma. Another proven case survived indefinitely, and a third recovered after total radiation despite the presence of secondary neuroblastoma in the skin. At the Sick Children's Hospital in Toronto, one patient recovered after partial excision of the tumour. These remarkable cases are explained in one of 3 ways:

(1) spontaneous haemorrhage and total necrosis.

(2) spontaneous maturation to ganglioneuroma or chromaffinoma.

(3) total destruction by radiation.

The other sympathetic nervous system tumours, ganglioneuroma and chromaffinoma are benign, although a secondary ganglioneuroma in liver and lymph node has been reported.

Of the other cancers of the adrenal gland, adrenal cortical carcinoma need only be mentioned. It is associated with virilism or precocious puberty in the male.

Other Tumours

Cancers of bone form an important group of tumours in children, making up 4-36 per cent of various series recorded. About ½ are osteogenic sarcoma and ½ Ewing's sarcoma. The features of these tumours are the same as in the adult and will not be mentioned further.

Soft tissue sarcoma, another important group of children's cancer, exhibits the same features as in the adult.

Primary carcinoma of the liver, though rare, is interesting. It is the commonest children's carcinoma and the commonest cause of hepatic tumour in children. Its incidence is the same in children as in adults; ½ the cases are under 2 years; 2/3 of the cases are in boys; 2/3 of the cases are hepatoma, 1/3 cholangioma.

INTRACRANIAL TUMOURS

R. S. FOWLER, 5T1

The intracranial tumours form an important group of neoplasms in infants and children. One might begin by asking the question, "How often does the doctor see a case of brain tumour in people under 14 years of age?" It has been found that between 1 in 100 and 1 in 2,000 admissions to children's hospitals are cases of brain tumour and also that 2½ per cent of all post-mortems performed in these hospitals are on cases of intracranial neoplasm. Fifteen to twenty per cent of all malignancies in children are brain tumours and about the same percentage of all brain tumours are found in this age group.

In general, brain tumours are most frequent from 5-10 years of age and from 25-50 years, while those of infants and children are commonly found around the age of 2, from 4-6 and from 9-13. There is a distinct decrease at the age of 16, probably because those tumours characteristic of infants and children are becoming more uncommon while those typical of adults have not yet appeared.

INCREASED INTRACRANIAL PRESSURE

The child suffering from any type of brain tumour at any site is likely to show the clinical picture of increased intracranial pressure. This is so important that it might be well to discuss it first before dealing with certain tumours in particular areas.

Mechanism

The skull has often been considered as an inexpansible box containing the brain, the cerebro-spinal fluid and the

blood in its vessels. An increase in the volume of any of these contents must be compensated for by an alteration of the volume of the other contents. When the limits of this normal compensatory mechanism are exceeded, the intracranial pressure is increased. A tumour does this in 2 ways:

1) by virtue of the volume it occupies within the closed box,

2) by an obstruction to the circulation of the cerebro-spinal fluid.

However, the child's skull is really an expansile box with 6 fontanelles which stay open until 12-18 months of age and cartilaginous sutures which do not become ossified until about 15 years of age. This explains why growths often reach a fair size before the symptoms are severe enough to cause the parents to seek medical aid.

The two great symptoms are headache and vomiting.

Headache

This is a very uncommon symptom in infants and children and its presence should arouse suspicion of serious underlying disease. Of course, in the younger age group it may be hard to elicit a good history from either parents or patient. In the older child headache comes on characteristically on arising in the morning and passes off later in the day. It is most often frontal, is sometimes occipital and is presumably referred pain due to irritation of the dura by increased tension.

Vomiting

Unlike headache, vomiting is a very common symptom of disease in childhood. However, early morning vomiting not related to the taking of food is a prominent symptom in most cases of raised pressure. The vomiting may or may not be projectile, may or may not be accompanied by nausea or abdominal discomfort, and is often initiated by those actions which change the intracranial pressure, *i.e.*, rising quickly in the morning, stooping, straining at stool, violent coughing. Nausea seldom follows the vomiting and most children can sit down to a hearty meal immediately after an episode. The compression of the medulla is thought to irritate the vomiting centre.

Decreased visual acuity

A decrease in visual acuity is another common complaint. The long delicate Abducent nerves are often squeezed as they pass through the tentorium, causing a squint and diplopia. This is frequently interpreted as poor vision by the child. Besides, there may be an optic atrophy secondary to prolonged papilloedema or a primary optic atrophy due to pressure on the nerve. The latter is rare and is difficult to detect in children.

Personality change

Some children become moody, irritable, listless and disobedient or they may lose interest in playing, become lethargic, then sleepy and finally lapse into coma.

Almost everyone writing on this subject emphasizes the fact that the above symptoms may be intermittent especially in children under age 8. This is presumably because the skull expands and compensates for the increased pressure. Symptoms are relieved for a while and then return as the pressure builds up again. Exacerbations of symptoms often occur after an acute illness and a remission is sometimes noted shortly after admission to hospital.

Enlarged head

This is the most important *sign* of increased intracranial pressure in an infant or child. The sutures separate, the fontanelles are tense and bulging and the thin skull bones balloon under the pressure. Such a skull gives forth a "cracked pot" sound on digital percussion; this is Macewan's sign. It is thought by some to be the most valuable single sign of increased pressure. The superficial scalp viens are often dilated because the pressure inside has forced blood out through the emissary veins.

Other findings

In two reported series, about 90 percent of cases showed some degree of papilloedema. Another less common finding is a bilateral or unilateral internal strabismus due to a sixth nerve palsy; this sign is not of localizing value. There is an interesting small series of 21 cases reported in which the B.M.R. was below normal, varying from –3 to –21.

X-ray

There are certain findings on the plain X-ray of the skull which are pathognomonic. Spreading of the sutures is easy to see in many cases with the coronal suture being widened first and then the sagittal suture. The so-called "digital markings" (rarefied areas on the inner surface of the skull corresponding to cerebral convulutions) are greatly accentuated when the pressure is raised. Finally the roentgenogram may show an erosion of the sella turcica; general pressure causes resorption of the anterior clinoid processes giving a long sella, while an internal hydrocephalus with bulging of the floor of the third ventricle causes a deepening to occur.

DIFFERENTIAL DIAGNOSIS

Some early cases of raised intracranial pressure have been diagnosed as gastro intestinal upsets, behaviour problems, post-traumatic states or just "nothing wrong". Lead poisoning, sub-dural hæmatoma and congenial hydrocephalus may cause the typical picture of increased pressure.

Once its presence has been established, one would like answers to the questions, "Where is the tumour?" and "What type of tumour is it?" Localization is often difficult but it is obviously very important to place the tumour either above or below that great partition of the intracranial space, the tentorium cerebelli. About 2/3 of brain tumours occur below the tentorium in this age group. In adults supratentorial tumours are more common.

INFRATENTORIAL TUMOURS

Medulloblastoma and ependymoma commonly affect the cerebellum in the midline. The resulting clinical picture has been called the "vernis syndrome" and its most outstanding symptom is a staggering, uncertain gait. Prominent physical signs are:

1) nystagmus on looking to either side.
2) bilateral hypotonia and diminished reflexes.
3) pain and rigidity of the neck with head retraction.
4) adiadokokenesia.

The MEDULLOBLASTOMA is a very malignant, rapidly-growing tumour found usually around the age of 5. This tumour is composed of primitive, undifferentiated cells which readily invade the pia and spread widely in the subarach-

noid space. The average duration of life after the onset is 15 months. Treatment usually consists of cerebellar decompression with partial excision of the tumour followed by prolonged intensive radiation over the whole neural axis.

The EPENDYMOMA usually arises from the floor of the fourth ventricle and grows backwards pressing on the cerebellum. It varies considerably in malignancy.

The ASTROCYTOMA of the cerebellum is probably the most hopeful of all children's brain tumours and constitutes about 25 per cent of cases. It gives a clinical picture similar to the "vermis syndrome". However, these tumours are often located in one of the cerebellar hemispheres so that the signs are often localized or are more pronounced on the side of the lesion. The astrocytoma is a slow-growing, indolent tumour with a marked tendency to liquefaction producing a cyst with a wall composed of primitive fibrillary or protoplasmic astrocytes. Treatment consists of radical resection and the results are rather encouraging. Not only do the children live but they apparently maintain and develop a normal intelligence.

The last tumours of the posterior fossa to mention are the gliomas of the brain stem. They are diagnosed only to be left alone. Vomiting is prominent here because of direct invasion of the centre by tumour tissue and multiple cranial nerve palsies (especially sixth) occur early.

SUPRATENTORIAL TUMOURS

These will only be mentioned here. Pathologically there is a great variety but the tumours fall into three groups according to the area of the brain they affect.

1) Cerebral hemispheres
   a) Glioma
   b) Meningioma
   c) Angioma
2) Hypothalamic region
   a) Craniopharyngioma
   b) Glioma of hypothalamus
   c) Glioma of optic nerve and chiasma
3) Superior and inferior colliculi —Pinealoma

CONCLUSION

The outlook for intracranial tumours of infants and children is, generally speaking, not too bright. However, one surgeon estimates that 1/3 are curable if they are seen early. It is important to remember, then, that these tumours, although uncommon, can occur in childhood and early diagnosis is essential for good results.

TUMOURS OF HAEMATOPOIETIC AND LYMPHOID TISSUES

I. LIDSKY, 5T1

THE RELATIVE INCIDENCE of leukaemia, lymphosarcoma and Hodgkin's disease is shown in the table below.

TORONTO SICK CHILDREN'S HOSPITAL (285 cases)	
Leukaemia	225
Lymphosarcoma and Reticulum Cell Sarcoma	36
Hodgkin's Disease	24

LEUKAEMIA

Leukaemia is a fatal systemic disease affecting chiefly the blood forming organs of the body. At some time during the course of the disease abnormal leucocytes can be demonstrated in the peripheral blood, the bone marrow, or both.

Age and Sex Incidence

Leukaemia is rare in the neonatal period. The incidence increases after the first year of life, the acute form being found in infants and young children, the chronic form seen only after 8 years of age. The peak age is about 3 years with about 48 per cent occurring in the age group 1-4 years. The sex incidence is abut 53 per cent male.

Aetiology and Pathology

It is a neoplastic disease of unknown aetiology. At autopsy, the findings in individual cases vary because any organ in the body can be affected. One may find petechiae and ecchymoses in the skin, mucous membranes, serous surfaces, lungs, kidneys, heart, pancreas, adrenals and nervous system. The lymph nodes occasionally show generalized lymphadenopathy but usually only a few nodes are enlarged. The spleen is enlarged, as is also the liver. These are infiltrated with leukaemic cells. In the liver the cells are concentrated in the portal areas. The kidneys may also be enlarged and infiltrated. The bone marrow is firm, deep-red or red-grey in colour with little or no fatty marrow visible. There is a reduction of the erythropoietic cells with an increase in the type of invading cell.

Clinical Manifestations

There is no true characteristic symptom complex in leukaemia. The early manifestations are often extremely protean because of widespread involvement of various organs in the body, and may simulate closely many of the acute and subacute diseases of childhood. The signs and symptoms can be divided into two main groups.

1) General or Non-specific

These include anorexia, vomiting, vague abdominal pain, weakness, fatigue and loss of weight. The temperature may remain normal or rise insiduously until it reaches 103-104 degrees F. Dyspnoea and palpitations appear later in the disease. Occasionally the first sign may be a stomatitis with bleeding and ulceration of the gums. This is seen most commonly in aleukaemic leukaemia.

2) Specific

These arise from the spread and rapid growth of the leukaemic cells. The commonest symptoms in order of frequency are pallor, haemorrhagic tendencies (petechiae and ecchymoses), listlessness, splenomegaly, hepatomegaly, generalized lymphadenopathy and bone pain. The haemorrhagic tendency is due to involvement of the bone marrow. As the disease progresses the bleeding tendency increases with frequent bleeding from the nose and mucous membranes. The bone pain is often referred to the joints and there may be associated tenderness and swelling. These features often result in an erroneous diagnosis of rheumatic fever being made. The bone pain is due to increased pressure in the bone and under the periosteum as a result of infiltration and proliferation of leukaemic cells. Other rarer causes are enlarged kidneys, nodules in the skin and scalp and neurological signs due to encroachment on the spinal cord.

Laboratory Data

The leucocyte count in the peripheral blood is variable, ranging from 1000 to 100,000 per c.c., or more. In children it is very common to have less than 5000 cells per c.c. of blood. The finding in most cases is the presence of blast cells in the peripheral blood. These may make up 85-95 per cent of the total white cell count.

The red cells are nearly always re-

duced in number, varying from 500,000 to 3,500,000. Most cases will show some anaemia when first seen while the remainder will develop an anaemia during the course of the ilness. The haemoglobin varies from 3.0 to 10.5 Gm. (It can be seen that the anaemia is of the aplastic variety.)

The platelets are reduced in all cases below 100,000 except at the onset of the chronic form of leukaemia. The bleeding time varies from ten minutes to several hours, though the clotting time is normal. Clot retraction is delayed in most cases.

Sternal marrow biopsy shows abnormal leucocytes with depression of erythropoietic tissue paralleling the peripheral anaemia. The cells are mainly "stem" cells together with a few myelocytes. The megakaryocytes are also greatly reduced.

X-ray changes in the bones occur in 70-75 per cent of all cases. These changes in order of frequency are:

1) transverse radiolucent bands in the metaphyses of the long bones.

2) osteolysis in the long bones, ribs, skull, vertebrae, small bones of hands and feet and pelvic bones.

3) periosteal elevation with new bone formation.

4) osteosclerosis.

Diagnosis

The diagnosis is often made difficult by:

1) tendency in non-leukaemic children to produce abnormal leucocytes in response to severe infections.

2) aleukaemic peripheral blood.

Simple sepsis mimics acute leukaemia frequently because there may be anaemia, thrombocytopenia, leucocytosis or leucopenia with immature cells in the peripheral blood. The only positive diagnosis is made from lymph node or bone marrow biopsy.

Course and Prognosis

Leukaemia is a progressive fatal disease. The acute form usually causes death in a few weeks while those with the subacute form may live for several months or a year. The average duration of the disease is about six months. Spontaneous remission for varying lengths of time may occur.

Treatment

Treatment in the past has included radiation with roentgen units, radioactive phosphorus, Benzol, Fowler's solution and Methane. These have been replaced today by the Folic Acid antagonists, Aminopterin and A-methopterin.

Aminopterin is the drug of choice in most clinics. The dose is 0.5-1.0 mg intramuscularly each day until a remission occurs or until toxic symptoms become evident. A maintainance dose of 0.5-1.0 mg three times a week is then given. When an exacerbation occurs, A-methopterin, 2.5-5.0 mg orally, is given in conjunction with Aminopterin.

Supportive therapy is essential. Whole blood transfusions should be given in severe anaemia so that the red cell count is maintained at a level of 3,000,000 or more. Antibiotics are given when there is a marked granulocytosis.

Beneficial effects are evident in about 30 per cent of cases in 5-10 days. There is a marked reduction of the peripheral white cells with a reduced percentage of immature forms. The cellular elements in the marrow are also reduced. In 4-6 weeks after therapy the peripheral blood is normal and the bone marrow shows less than one per cent blast cells. In

addition to the haematologic remission, there is often a rapid diminution in the size of the liver, spleen and lymph nodes. The patient feels well and is able to lead a normal life for a varying length of time.

Unfortunately, toxic reactions to Aminopterin are common, *i.e.*, stomatitis, diarrhoae and later profuse haemorrhage, secondary infection due to a marked leucopenia, petechiae and ecchymoses as a result of bone marrow depression.

The latest treatment for leukaemia, and still in experimental stages, is ACTH. The mode of action of ACTH is now known but it is believed that it causes a depression of lymphoid tissue and eosinophils, and a simultaneous stimulation of granulocytic tissue. Some observers have found that lymphatic leukaemia responds better to ACTH than the myelogenous forms. The reason for this may be the mode of action of the drug. ACTH causes a rapid improvement in the leukaemic picture for a varying period of time. However, with further relapses the response is not as good as the initial one, and the remissions become shorter. Finally, the patient becomes refractory to this form of therapy and succumbs to the illness.

LYMPHOSARCOMA

This malignant disease primarily involves the lymph nodes and is nearly 100 per cent fatal.

Age and Sex Incidence

Lymphosarcoma is about twice as common in children as it is in adults. About 45 per cent occurs under the age of ten years. The sex incidence is predominantly male, about 75 per cent.

Pathology

The disease begins in one group of lymph nodes and spreads by way of the lymphatics to involve other groups. The mediastinal and abdominal nodes are nearly always involved to a great degree. There is early rupture through the capsule of the glands with invasion locally, resulting in the coalescence of the glands into large masses. Microscopically there is replacement of mature lymphocytes by large hyperchromatic cells. The marked feature is the uniformity of the cells.

Clinical Manifestations

Lymphosarcoma has a clinical picture similar to rapidly progressing Hodgkin's disease and often similar to leukaemia. Pallor, petechiae and eccymoses are the commonest signs, while lymphadenopathy, usually cervical, hepatomegaly and/or splenomegaly are the next commonest. Skin nodules, weakness, anorexia and loss of weight are the later symptoms and signs and not always present. A moderate degree of anaemia with anisocytosis usually develops. The percentage of polymorphonuclear leucocytes also increases. In children, acute or subacute leukaemia will commonly develop in those suffering from lymphosarcoma.

Diagnosis

A positive diagnosis cannot be made without lymph node biopsy. This will alone differentiate it from Hodgkin's disease. Studies of the peripheral blood or bone marrow wil differentiate it from leukaemia.

Course and Prognosis

The course in children is usually extremely rapid and fatal. The majority of cases under the age of 15 years will be

dead in 8 months, with an average of about 4-5 months. In contrast, the duration of the illness in adults is about 2-3 years.

Treatment

The treatment is entirely palliative and the results on the whole are not very striking. In localized lymphosarcoma high voltage radiation is the treatment of choice. In generalized lymphosarcoma Nitrogen Mustard, methyl bis(B-chloroethyl)amine gives the best results. Complete remission for varying periods time occur in about 33 per cent of all cases treated.

In addition to the specific therapy, whole blood transfusions should be given if severe anaemia or bleeding tendencies develop.

HODGKIN'S DISEASE

This is a fatal disease in which there is a chronic, progressive and painless enlargement of the lymph nodes and lymphoid structures in one or more regions of the body.

Age and Sex Incidence

Hodgkin's disease is commoner in adults than in children, the highest incidence being between 20-40 years of age. It is rare under 4 years of age, the greatest incidence in children occurring in the age group 4-12 years. About 10 per cent of all cases occur in the first decade. The onset of the disease is rare during puberty, but as yet the reason for this is not known. The sex incidence is predominantly male, 70-85 per cent. Under 10 years of age the male predominance is more striking, about 90 per cent.

Aetiology and Pathology

The cause of Hodgkin's disease is unknown. It has been suggested by some that it is a true neoplastic disease; by others, that it is an infectious granuloma. In the past, tuberculosis, particularly the avian type, and brucellosis, were considered possible causes but the tubercle bacillus and the *Brucella* bacillus could never be isolated from the diseased tissues. More recently the virus has been accused of being the aetiological agent, but a virus has never been demonstrated. At the present time, many observers believe that Hodgkin's disease may be a combination of an inflammatory granuloma and a neoplastic disease.

The disease is confined in the majority of cases to the lymph nodes, or lymph nodes and spleen, although it may involve the lymphoid tissue in any organ in the body. The lesions first arise in the abdominal and mediastinal nodes and lymphoid collections. They appear in the cervical nodes, lymphoid collections in the liver, kidneys, spleen and other organs. The glands are firm and nontender and tend to remain discrete until later in the disease when they fuse together. The cut surface is homogeneous and grey in colour and has been well-likened to "fish flesh". The bones are involved in about 40 per cent of cases, commonly the vertebrae and more rarely the sternum, ribs, pelvis and skull. The marrow is also invaded.

Microscopically the outstanding feature is the pleomorphism. There are usually Reed-Sternberg cells present, and epithelioid cells, lymphocytes, plasma cells, polymorphonuclear leucocytes and eosinophils.

Clinical Manifestations

The clinical picture is extremely protean because any organ in the body may be involved. Usually the first evidence of

the disease is a painless enlargement of one or more groups of superficial nodes, often in the cervical region. The glands are firm, elastic, discrete and non-tender. Mechanical pressure by enlarging mediastinal nodes may cause oedema of the face and upper limbs, dysphagia, dyspnoea, cough and hoarseness. The spleen is usually enlarged and the liver may also be enlarged. Occasionally the first symptoms are fatigue, anorexia, loss of weight and fluctuating fever. These same symptoms can appear later in the disease. On rare occasions one may see acute Hodgkin's with fever, anorexia, nausea, vomiting, prostration, severe anaemia, leucopenia and thrombocytopenia, but with little or no generalized lymphadenopathy. This form of the disease resembles acute leukaemia both in its course and in the systemic infiltration which rapidly develops.

Fever occurs in approximately 50 per cent of all patients. It may be the septic, spiking type or of the Pel-Ebstein variety. In the latter the temperature rises gradually over a period of 10 days to 2 weeks until it reaches 103-104 degrees F. After 3-4 days it gradually falls to normal, the patient remaining afebrile for about 10 days to 2 weeks.

Another symptom, occurring in about 25 per cent, is generalized pruritis.

Laboratory Data

Anaemia is uncommon in the early stages of the illness but as the bone marrow is invaded, a hypoplastic anaemia develops. Early in the disease there may be a rise in patelets, monocytes and eosinophils, the latter reaching a level of 4-50 per cent of the total of the total white cell count. The leucocyte count varies from 5000 to 50,000 cells, with an increased immaturity of the neutrophils. In the terminal stage there is thrombocytopenia, leucopenia, particularly involving the lymphocytes, and anaemia.

Diagnosis

The final analysis must rest on a properly executed biopsy. The differential is lymphosarcoma, tuberculosis with adenitis, infectious monocleosis, leukaemia and chronic inflammation.

Course and Prognosis

The average duration is about 2.5 years, although cases have been reported alive and well 10-15 years after the onset of symptoms. Death usually results from severe aplastic anaemia or secondary respiratory infection.

Treatment

Localized Hodgkin's disease can be treated by radical excision of the enlarged nodes followed by high voltage radiation. Radiation therapy may also be useful in generalized Hodgkin's disease. The remissions last for varying lengths of time. Further treatments give less beneficial effects until the patient becomes refractory to this mode of therapy.

Nitrogen Mustard is used widely today in the treatment of the generalized disease and also for those cases that have become refractory to radiation therapy. After a course of therapy with Nitrogen Mustard many cases will show a return in the sensitivity to radiation. The dose is 0.1 mg per Kilo body weight per day for 4-6 days. Each dose is dissolved in 10 c.c. physiological saline and is injected intravenously while 100-200 c.c. saline solution is given in another vein. The effects of therapy are often evident within a few days. There is a

sense of well-being, upsurge of appetite and a decrease in temperature. Lymphadenopathy, splenomegaly and hepatomegaly regress rapidly in about 70 per cent of cases. These remissions last 1-10 months. Toxic reactions are very common. Immediate reactions may appear in ½-4 hours and last 1-2 days. These are nausea, vomiting, diarrhoea, anorexia, chills, fever, headache and venous thrombosis. Occasionally one may see a maculopapular, pruritic rash on the trunk and extremities 1-4 weeks after treatment. The most serious complication is depression of the bone marrow and lymphoid structures. The lymphocytes in the peripheral blood are greatly reduced in the first 24 hours. Later there is a marked leucopenia, anaemia and thrombocytopenia. These are most marked during the third week after treatment. By six weeks the blood picture improves and the bone marrow shows hyperplasia of erythroid and myeloid elements.

Cortisone has been tried in the treatment of three cases of Hodgkin's disease at the Mayo Clinic. Remissions lasted only 15-30 days and subsequent roentgen therapy proved more effective than Cortisone.

VACCINATION REQUIREMENTS FOR TRAVELERS PUBLISHED BY WORLD HEALTH ORGANIZATION

The World Health Organization has compiled and published a list of vaccinations required by 122 countries and territories from travelers coming from abroad. The list indicates the situation as on 31 December 1950.

Copies of this list will be made available, on request, to national health administrations, port and airport health authorities, steamship navigation companies and airlines, and their agents.

The World Health Organization states that there is no provision in the International Sanitary Conventions making it compulsory for travelers to be vaccinated or inoculated against the diseases dealt with. However, for some years past it has been customary for sanitary administrations to request travelers coming from infected, suspected, or even health areas to present on arrival in the country certificates of inoculation or vaccination against one or more of these disease: cholera, yellow fever, typhus, and smallpox.

"Naturally, the publication of the requirements enacted does not necessarily imply that they are approved of by the World Health Organization," the Foreword states. "The sole aim is to make the existing state of affairs, which it is hoped will be modified in the sense of a simplification of the formalities on the appearance of the new International Sanitary Regulations, which are intended to replace the conventions at present in force."

A reminder of the period of validity of certificates of vaccination or inoculation, as laid down in the 1944 International Sanitary Convention, is also included. Reckoned from the date of immunization, it is: for smallpox, 14 days to 3 years; for cholera, 7 days to 6 months; for yellow fever, 10 days to 4 years; for typhus, 1 year.

A PROBLEM IN DIAGNOSIS

W. JEAN HOGARTH, 5T1

PRESENTATION OF CASE

H. J., A FIFTY-TWO YEAR OLD white male, was admitted to the Surgical Service of the Toronto General Hospital on September 27, 1950. His chief complaint was severe pain in the right groin radiating to the back and down the right leg. Pain had been present constantly for nine months, and was increasing in severity.

The patient had been in good health previous to December, 1949. At that time while at his work as a milk route supervisor, he slipped and fell from his truck while carrying a case of milk. Almost immediately he experienced a sharp pain in the region of the right pubic tubercle. Two or three days later a swelling appeared here. He continued to work for a week but the pain became so severe that he consulted a doctor. He was admitted to a hospital where a bilateral inguinal herniorrhaphy was performed. This operation failed to relieve his pain. He remained off work until April when he attempted to resume his work. Within a few days he was forced to stop by the severe deep boring pain in the right groin which radiated posteriorly to the fourth and fifth lumbar region and down the antero-lateral surface of the right thigh. He was admitted to hospital where novocaine injections were given. These gave only temporary relief for one to two hours.

Further novocaine injections were used during the summer with even less relief. It was suggested that many of his complaints were functional in origin. In mid-July he was sent home and told to return to his work. By this time he could not even walk around in his own home. He was losing his appetite and started to have severe intractable constipation relieved only by frequent enemas. Since January, 1950 he had lost thirty-five pounds in weight. At this time he was referred to the Toronto General Hospital.

On admission he was found to be a small pale man with evidence of marked weight loss, who was obviously suffering severe pain. Temperature was 98°F.; pulse 80 per minute; respiratory rate 20 per minute; blood pressure 168/92.

On examination a few fine rales were heard at both lung bases, otherwise the chest was normal. The abdomen was scaphoid; scars of the recent herniorrhaphies were visible. The abdomen did not move well on respiration. A mass was visible in the right upper quadrant which on palpation was found to be stony hard and non-tender. It extended from the costal margin to one inch below the umbilicus, and from the midline to the right flank. The surface was smooth and had rounded edges. The mass did not move on respiration. There were no other abdominal findings. There were no urinary complaints or disturbances of function. Rectal examination was not remarkable. No palpable enlarged lymph nodes were found.

Other relevant findings included the fact that the patient lay in bed with the right hip and knee constantly flexed. There was a marked scoliosis of the lower thoracic and upper lumbar spine

with convexity to the left. There was atrophy and weakness of the right quadriceps muscle. The flexion deformity at the right hip was fixed at about sixty degrees. The hip could be neither extended nor further flexed. Any attempt to move the right leg greatly increased his pain. There was marked hyperaesthesia over the antero-lateral surface of the right thigh in the distribution of the first and second lumbar nerves. Standing, walking, sneezing, coughing and straining at stool aggravated his pain. Lying down with the hip and knee flexed partially relieved the pain. Standing confirmed the voluntary scoliosis of the spine. Pain prevented him from assuming the erect posture. There was marked spasm of the sacro-iliac muscles and of the ilio-psoas muscle of the right side. Forward bending was limited to 65°; left lateral bending to 10°; right lateral bending to 50°. Rotation of the spine was impossible. Percussion of the spine caused no pain. There were no further physical findings at this time.

Laboratory examination showed a normal urinalysis; a haemoglobin level of 60 per cent; a white blood count of 10,700; sedimentation rate of 26 mm. per hour. Blood non-protein nitrogen was 39 mg. per cent. A stool sample gave a positive benzidine test. The blood Wassermann was negative. A Gram stain of the urine revealed no pus cells or bacteria and urine culture was negative.

An X-ray of the spine and pelvis showed the postural scoliosis. An intravenous pyelogram demonstrated a normal left kidney and a non-functioning right kidney. There seemed to be a large mass on the right side of the abdomen with loss of the ilio-psoas line. A gastric series was reported normal. A barium enema showed an area in the ascending colon close to the hepatic flexure which failed to fill. This was felt to be due to involvement of the colon from without by the mass in the right side of the abdomen.

The patient was transferred to the Urological Service on October 16th. At this time the urine showed 4 - 8 pus cells per high power field. Examination of the chest now revealed decreased movement, increased vocal fremitus and decreased breath sounds over the right lower lobe of the lung. This area was dull to percussion. There was increased vocal resonance and many rales and rhonchi. A temperature of 101°F. fell to normal on penicillin therapy, but the chest signs persisted unchanged. There were no symptoms referrable to the lung during this time. The patient appeared to be going steadily downhill.

DIFFERENTIAL DIAGNOSIS

It is necessary to explain a syndrome causing (1) severe boring pain in the region of the distribution of nerve roots L1 and L2, (2) a large, stony hard, non-tender mass on the right side of the abdomen causing partial bowel obstruction, (3) non-function of the right kidney with obliteration of the right ilio-psoas line on X-ray, (4) marked psoas spasm on the right side, (5) weight loss of thirty-five pounds.

The following diagnoses were considered:

1. Retro-peritoneal sarcoma.
2. Hypernephroma or other malignant kidney tumours.
3. Retro-peritoneal fibroma, lipoma, or neurofibroma.
4. Lymphoblastoma.
5. Carcinoma of the hepatic flexure.

This type of pain with its radiation and evidence of nerve root involvement could not have been due to the hernia or its repair. One could not explain the sensory changes, quadriceps wasting or psoas spasm on this basis. His symptoms were increasing steadily. By the time he reached this hospital his disease was far advanced. He was referred for the purpose of having a final diagnosis made; this was important as he was a compensation case.

Retro-peritoneal sarcoma was thought of first because this mass was definitely retro-peritoneal on physical examination. Sarcoma was likely because of the evidence pointing to malignancy — weight loss, low haemoglobin, the stony hard mass which was fixed and non-tender. Evidence was present of invasion of the psoas muscle causing spasm and also of nerve root involvement. The presence of a neurofibrosarcoma would explain these symptoms and account for the non-functioning right kidney due to involvement of the kidney and perirenal tissues by tumour.

Hypernephroma or other maligant kidney tumours can not be ruled out before operation. Such tumours can cause all these symptoms and signs. There would have to be extension beyond the kidney into the perirenal tissues involving muscles and nerve roots and pressing on the bowel causing partial obstruction. The only thing lacking was the cardinal symptom of renal neoplasm — haematuria. This is not absolutely essential for the diagnosis.

Retro-peritoneal fibroma, lipoma, and *neurofibroma* are benign encapsulated tumours which may kill by pressure on vital structures. They are not likely to cause marked clinical manifestations of the type encountered here. This picture appears to be due to a fairly rapidly advancing lesion that is invading tissue.

A *retro-peritoneal lymphosarcoma* could not be absolutely ruled out before operation. This is by no means a typical picture, but these symptoms and signs could be caused by such a tumour. There were no apparent enlarged nodes or spleen. The blood picture was normal except for a mild iron-deficiency anaemia.

Carcinoma of the hepatic flexure could be ruled out by the findings on barium enema and by the extent of the lesion. If this was carcinoma of the colon one would expect some symptoms referable to the bowel long before evidence of the invasion of the retro-peritoneal structures. Clinical evidence would not support this diagnosis.

CLINICAL DIAGNOSIS

A retro-peritoneal malignant tumour, either primary in the kidney or a neurofibrosarcoma.

TREATMENT AND CLINICAL COURSE

An exploratory laparotomy was performed on October 19th. A large retro-peritoneal malignant tumour was found involving the kidney and surrounding structures. At operation it was impossible to decide if the primary was in the kidney or not. The condition was inoperable. Pathological report of a biopsy stated the tumour to be Squamous Cell Carcinoma of the Kidney. By this time there was clinical and radiological evidence of metastases in the lower lobe of the right lung.

The post-operative course was one of severe intractable pain. Following consultation with the neurosurgeons a

classical cordotomy to relieve the pain was performed on November 13th with excellent results. As further treatment was not indicated the patient was allowed to return home at the beginning of December.

FINAL DIAGNOSIS

Squamous Cell Carcinoma of the Kidney with invasion of the perirenal tissue and mastastases in the lower lobe of the right lung.

ACKNOWLEDGEMENT

It is a pleasure to acknowledge the valuable assistance of Professor R. M. Janes during the preparation of this case report.

RECENT ACCESSIONS TO THE MEDICAL READING ROOM

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IN THIS ISSUE

In this issue, the JOURNAL pays tribute to the new Hospital for Sick Children. This new structure, its staff and its facilities, provide a splendid addition to the medical centre available for teaching at this university.

The editorial board was fortunate in obtaining four articles pertaining to Paediatrics to use in conjunction with an article on the new hospital. If the subscribers give this plan of publishing a mass of material on one subject a good reception, the board can be directed to attempt whole issues on one topic in the future. Comments on this type of journal will be appreciated with the assurance that they will receive serious consideration by the JOURNAL staff.

HUMANISM AND MEDICINE

H. B. VAN WYCK*

PART XVI (continued)

OBSTETRICS AND GYNAECOLOGY IN THE 17th CENTURY

PODALIC VERSION HAD BEEN advocated by the Alexandrian alumnus, Soranus of Ephesus, who practised in Rome (98-138 A.D.). His predecessors seem to have reserved the operation for the dead foetus; but Soranus taught that version in difficult labour could at times save the child. The operation seems to have been almost forgotten until the writings of Rösslin in the "Rosegarten" (1513) brought the operation of version to the attention of the post-Renaissance world. In the "Rosegarten," version is discussed with such practical details that one may conclude that some of his contemporaries were familiar with intrauterine procedures. Paré, whose obstetrical experience was perhaps limited, showed a familiarity with the literature on the subject. He subscribed to the current view that the living child takes part actively in the mechanism of birth. He also followed the current trend in being unable to solve the problems of difficult labour in cephalic presentations without frequent recourse to version. These views persisted on into the 18th century. Portal (1603-1703) was wise enough to teach that most face presentations may run a normal course.

That some alternative means of extraction of the arrested head might be devised by the use of an instrument appeared in the writings of Avicenna (about 1000 A.D.). Previous to his time the Arabians had recorded the use of a four-pronged hook tractor for the delivery of a dead foetus, but Avicenna recorded the delivery of a living child by the use of forceps. He stated, however, that if the head cannot be delivered by this instrument the head must be reduced by craniotomy.

That the obstetrical forceps did not sooner come into general use was probably because the male attendant was not allowed at the confinement except in extreme cases of obstructed labour. Thus the consultant called in these emergencies learned little except procedures of mutilation. As Smellie remarks, it is not surprising that women were terrified whenever a man midwife was called because they had noted that in such instances "either the mother or the child or both were lost."

A serviceable instrument was invented and its use perfected by the Chamberlen family, the originator of the first forceps being probably William Chamberlen (1540-1596), a Huguenot who fled to England in 1576. The secret was kept in the family. A great-grandson, Hugh, in 1670 attempted to sell the instrument in Paris for $7,500. Mauriceau incited him to test the instrument on a hopelessly obstructed patient. After a three-hour struggle, Chamberlen had to ad-

*Professor Emeritus of Obstetrics and Gynaecology.

mit defeat. This sorry exhibition and the subsequent death of the patient from a rupture of the uterus put an end to these sordid financial negotiations and the original forceps remained hidden until discovered in 1815 in the garret of a house in Essex occupied by descendants of the Chamberlens.

The Chamberlen forceps was short and straight; *i.e.,* without either shank or a pelvic curve. Such a primitive instrument failed to achieve a central grasp on the foetal head unless it had reached the pelvic outlet; and lacking sufficient length, the forceps could be locked only intravaginally in the higher positions. No radical improvement took place until the addition, in 1753, by Levret of a pelvic curve and a French lock to the lengthened instrument.

The 17th century passed without any wide employment of the forceps although by the beginning of the 18th century, a knowledge of the new principle began to diffuse among practitioners.

The Caesarian operation began to take a recognized place during the 17th century. In ancient Hindu literature there are references to post-mortem delivery by laporotomy but there is no unequivocal evidence that the ancients applied Caesarian Section in the living. The "lex regia" forbade the burial, before abdominal section to remove the products of conception, of any woman dead from childbirth. Pliny derived the term "caesarian" from the verb "caedo," to cut, and thus strengthened the tradition that the first of the Caesars received his name from the method of his delivery. This legend has been questioned as the old Roman custom hallowed by time was applied only to the dead and there is evidence that the mother of Julius survived to the period of the Gallic Wars.

The first reliable evidence of the performance of Caesarian Section on the living dates from the 16th century. About 1500, Jacob Nufer, a Swiss sow-gelder was reported to have delivered his wife abdominally after the midwives and lithotomists had failed. The mother survived and bore more children in the normal manner. Several 16th century authors refer to Caesarian Section in the living, among whom are Jacques Guillemeau and Francois Rousset. The latter author listed 15 successful cases. Mercurio, in his "La Comare o riccoglitrice," published in Venice (1596), gives much interesting detail. Mercurio was the first of the Italian writers for midwives. He begins by pointing out the seriousness of the operation, how necessary it is for the operator to have experience and a knowledge of anatomy, and that it is of the utmost importance "diligently to consider whether there is another way of delivering the child beside this and whether the woman's strength is sufficient." Mercurio continues: "if she has suffered malpractice at the hands of some imprudent midwife or of some unskilled surgeon, as is wont to befall her many times, and also if she has a weak pulse, one must with justifiable excuses withdraw from the aforementioned undertaking; . . . take care that before this operation the midwife arranges the evacuation of the patient's body, particularly the urine, so that by emptying the bladder it will remain lower down. If there is induration of the spleen, let the left side alone and make the incision in the right side; and if there is scirrhosis of the liver let the right side alone and cut on the left. The surgeon . . . cuts along the line that he marked with ink, reaching the deep fat of the

abdomen by the incision, and making the incision about a half a foot long, a little more or a little less, depending on whether the patient is bigger or smaller. When this first incision is made, he sees the body of the rectus muscle and he cuts it until he reaches the peritoneum; when the latter is opened one sees the uterus, which likewise must be cut, but lightly, so as not to injure the child: in cutting it one takes care to begin the incision in the upper part and make it run crosswise in order not to cut its (the child's) testicles, and the epididymides, and spermatic vessels. When that has been done successfully the child is taken out at once, together with the afterbirth. Cleanse the uterus, inside and out, of the blood scattered about, as well as possible. When this is done the uterus will at once return to place, and let the surgeon prepare to sew up the abdomen; to do that he needs the help of another person, who, while he (the surgeon) inserts the needle, uses his finger to compress the intestines, which will appear close by if the uterus is small."

"Be careful always to keep the wound covered with doubled warm cloths dipped in the aforementioned decoction, so that no excessive cold or air may penetrate into the intestines. The abdomen is sewed up with few stitches, like other sutures performed in any part of the body. The medical treatment that it receives following the operation is the same as for other wounds, namely, digestive remedies, purges, and consolidants; but the perfect cicatrisation of the injured uterus requires two remedies, one being the use of a tent made of old and very fine pieces, the size of the little finger, called by physicians a pessary, which must be anointed with complete rose oil, with the yolk of an egg, and must be placed in the pudenda, well to the front, three times a day in summer and two times a day in winter. The other remedy is to send enemas into the matrix; they are sent with small syringes made expressly to purge the matrix and to heal it and to strengthen it; and these are given with the decoction of artemisia, agrimony, wormwood, althea, plantain, red roses, flower of tree mallow, catnip, and root of birthwort for one kind, and for another kind sedge and sweet-smelling bulrushes; everything is boiled in lots of sour wine, and such enemas are always given before the pessary is inserted, with the tepid decoction described. The patient must live very quietly, as is customary in every wound of importance, and eschew the use of wine at least for a fortnight, lest it produce inflammation; and the woman must keep indoors, where air does not harm her, and in short let her govern herself with as much diligence as would be occasioned by a body whose abdomen had suffered a mortal injury. This is enough about this new method of aiding difficult deliveries to help miserable patients."[1]

Mercurio taught that the prime indication for Caesarian Section was contracted pelvis. Vesalius had already improved the anatomical concepts of the pelvis and his work had begun to influence the contemporary practice of obstetrics. By the end of the 17th century, Caesarian Section was being performed with increasing frequency in spite of the parallel growth in the efficiency of the use of the obstetrical forceps.

The growing popularity of surgical

[1]Herbert Thoms. Classical Contributions to Obstetrics and Gynaecology. Charles C. Thomas. 1935.

interference in delivery by intra-uterine manipulation, forceps, and the less rarely used Caesarian Section occurred during the period when the large modern urban hospital began to evolve and with it the epidemic character of puerperal sepsis. With the growth of cities and the early trend towards industrialization, large maternity units were being established, especially for the underprivileged in these over-crowded centres. Confinements began to take place in hospital to an ever increasing extent. At this point in the develoing social conditions of the Western World, puerperal sepsis as a plague began to appear. Sporadic cases had been recorded from earliest times and Hippocrates had left many clearly written records; but an epidemic sweeping through a crowded ward of postpartum patients like a fire, sometimes with no survivors, was a new and terrible phenomenon. The first comment on this new horror was perhaps that of Phillippe Peu who reported an epidemic in the Hotel Dieu in Paris, in 1664. From this time on through the next two centuries, the records of Western Europe contain a long series of such epidemics. Not until the work of Semmelweiss and his contemporaries in the middle of the 19th century, was any real understanding of the problem achieved. Difficult labour, hospital confinements, the interference of the male attendant, held a triple connotation of terror which had not been entirely dispelled until the advent of chemo-therapy and the antibiotics in our time. However, by the beginning of the 18th century, in the case of those who were fortunate enough to be able to remain at home for confinement, the increasing knowledge of anatomy and surgical principles had begun to raise the standard of obstetrical practice. This was to improve steadily during the next hundred years.

The practice of gynaecology, during the century, followed the general trends in surgery. The outstanding obstetricians of the time, Mercurio, Mauriceau, Portal and Van Roonhuyze were all progressive gynaecologists and laid emphasis on the importance of careful digital examination of the pelvis.

Van Roonhuyze wrote the first modern operative gynaecology, published in Amsterdam in 1663.[1] In it appears a description of a tubal pregnancy; and a repair of vesico-vaginal fistula is described. It would appear that the vaginal speculum, known to the ancients, as well as pessaries and suppositories were now in general use; and that removal of the uterus was still reserved for prolapse. Further advances in gynaecology had to await the subsequent advances in general surgery.

In summing up the state of medical practice in the 17th century, there is much to disappoint in the apparent lack of progress to parallel that in other branches of human activity and inquiry. Mental confusion, fallacious tradition, superstition, and ignorance beset the path of those who struggled to make medicine more scientific. The keys to revolutionary enlightenment were in other hands and for these the world had to await the great innovators of the 19th century—Lister, Pasteur, Claude Bernard, to single out three immortals.

Before proceeding to the progress in science of the next century, a short survey of the intellectual climate of the 17th century, philosophical, religious, and political, may now be undertaken.

[1]Heelkonstige Aanmerkingen Betreffende de Gebreken der Vrouwen.

ABSTRACTS

MEDICINE

Oral Penicillin in Prophylaxis of Recurrent Rheumatic Fever. Martin H. Maliner, J. of Paed., 6: No. 6, 1950.

The mortality rate of rheumatic fever reaches its highest peaks between the ages of one and four years (33.2 per 1000) and ten to fourteen years (16.3 per 1000). An affected child has,

4 chances in 5 to survive 15 years after onset,
3 chances in 4 to survive 20 years after onset,
1 chance in 2 to survive to the age of 40.

The almost inevitable recurring attack adds more damage to the heart. Much work has been done to prevent recurrence. To date the sulphonamides have been used in small doses, but this method has certain dangers and has been discontinued in many centres.

Penicillin troches of 5000 units each when held in the mouth of a potentially rheumatic patient were efficacious in sterilizing the mouth and throat for up to two hours at a time. It is believed that rheumatic fever occurs shortly after an upper respiratory infection of one to three days duration caused by specific strains of Hemolytic Streptococci and is followed by a latent period of one to three weeks during which some unknown phenomena take place. In a group of thirty rheumatic patients three of these troches were given daily. It was shown by taking throat cultures before and after the troches that this procedure kept the throat free from strept. hemolyticus and strept. viridans. In the thirty patients receiving troches there were no recurrences of rheumatic fever, but in the control group there were two recurrences, but in neither of these cases was strep. hemolyticus present in the throat. An incidental finding was the finding of staph. aureus in 95% of the cultures taken.

The author concludes that it is possible that penicillin troches may play a part in the prevention of the recurrence of rheumatic fever, and at least they are more desirable than the sulphonamides. In conclusion he suggests the possibility of staph. aureus as a possible etiological agent in rheumatic fever.

J. R. Topp.

Portal Tension. F. W. Taylor, H. L. Egbert, Surg., Gyn., Obs., 92: 64, 1951.

The authors attempt to clarify the controversial physiology, pathogenesis and effects of portal hypertension.

Various workers have measured portal tension by inserting a cannula connected to a saline-filled manometer, into a vein of the gastrocolic omentum. The saline falls to a level equal to the pressure in the vein and a reading is taken directly from the manometer. The authors offer the following criticisms: 1. Such a reading does not represent portal pressure since the portal vein lies a considerable distance deep to the gastrocolic omentum. 2. Some workers have corrected their readings to the "cardiac level" but a correction to the posterior wall of the heart would be 100 millimeters higher than a correction to the anterior wall. 3. It would be logical to accept the centre of the left auricle as a point of reference but the inaccuracies that would result from trying to estimate this point in a closed chest would invalidate the readings of even the most accurate manometer.

A plea is made for a uniform method of measuring portal tension and a method is suggested. The suggested method refers pressure readings to the level of the splenic vein which, since it lies close to the vertebral column is easy to measure and which is accurately indicative of pressure in the portal vein.

Present accepted normal pressures in portal vein range from 100-200 millimeters of water but these are either cited without reference to a base line or are "adjusted to the cardiac level". The authors have found that using their method, normal values range from 150-300 mm of water with the majority falling between 175-225.

Although portal hypertension produces chronic congestive splenomegaly, the con-

clusion that portal hypertension is the sole etiological agent in oesophageal and gastric varices is not warranted. It is pointed out that the venous pressure in the veins of the sigmoid are 3 to 4 times greater than that in the oesophageal veins and yet in the sigmoid there are no massive hemorrhages or "tremendously dilated nests of veins". Other factors to be considered in oesophageal varices are congenital weakness and the effect of intrathoracic negative pressure.

Ascites in the Banti syndrome is not caused by portal hypertension per se but is due to decreased plasma protein which, in turn, is due to liver damage.

P. MONTGOMERY

Relief of Angina Pectoris by Sympathectomy: J. A. Evans, J. L. Poppen, J. B. Tobias. J.A.M.A., **144:** No. 17, 1950.

Report of results in ten patients subjected to high thoracolumbar sympathectomy, including the anginal pathway.

The anginal pathway is described as involving the sympathetic system from the stellate ganglion to the fourth thoracic ganglion. The authors recommend bilateral removal of these ganglion as well as the lower thoracic and lumbar ganglia in the treatment of hypertensive patients with angina.

They report the results of operation approximating this as nearly as possible on ten patients. Complete relief except for a residual sensation of constriction in the throat was obtained in five cases. There was partial but satisfactory relief of pain in the remaining five patients.

Disadvantages of the operation were ptosis of Horner's Syndrome, postural hypotension, severe sweating in the groins and swollen nasal membranes. However, Horner's Syndrome is not a valid contraindiction to carrying resection to the lower stellate ganglion, especially when the resection is bilateral.

D. A. SMITH

Erb's Palsy with Special Reference to Physical Medicine: M. Weinstein, R. Rosenfeld, A. Gordon. Physical Therapy Review, **30:** 422, 1950.

The authors review a case of Erbs palsy and point out the importance of prevention if possible and early diagnosis and treatment if prevention is not possible.

Erb's paralysis usually follows a difficult delivery of a baby in whom the clavicles are well ossified and which will neither bend nor break with forcible extraction. Paralysis is noted early and maybe confined to the upper or lower arm or involve the entire limb. The arm should be splinted early in abduction and external rotation to prevent shortening of the involved muscles.

The treatment consists of gentle massage with active and passive exercise; gentle manipulation of the shoulder and elbow joints with galvanic stimulation of the involved muscles. Active exercise is carried out by having the child reach for toys etc. (this is not possible before the age of 5 months). In play substitute movements are discouraged in order to make this activity serve the purpose of active exercise.

G. GRAY

HAEMATOLOGY

Study of an American Negro Family with the Rare Rh Genotype (Cde/cde): S. Phansomboon, O. J. Pollak. J. of Immun., **65:** 711, 1950.

The authors report a rare Rh genotype blood (Cde/cde) of a negro mother. It has been estimated that the incidence of this genotype is 5:100,000 in England (and presumably in the white population of U.S.A.), and much lower in the negro race.

Of the seven offsprings of this mother, the second and sixth were miscarriages and the third was a premature icteric birth terminating in death. The seventh child, a heterozygous Rh positive baby was born healthy—an uncommon occurrence considering the history.

The authors also briefly discuss the manner of transmission of this rare genotype and conclude that there are three possibilities:

(1) Combination in one chromosome i.e. direct transmission with no change from the parents.

(2) Crossing over or double crossing over.
(3) Gene mutation.

An interesting theory to explain the difference in incidence of Rh negative along racial lines is set forth. The authors postulate that many thousands of years ago the incidence of Rh negative and Rh positive were equal, but that death of heterozygous offsprings due to congenital hemolytic diseases has reduced the "cde" genes which occur less frequently. Thus the incidence of Rh negative in a race varies with the phylogenesis of the race.

S. Davis

Transfusion of Leukemic Leucocytes in Man. Hematologic and Physiologic Changes. J. T. Lanman, H. R. Bierman, R. L. Byron, Blood, **5:** 1099-1113, 1950.

Since the lymphocyte count of the blood is normally constant, a dynamic equilibrium between the entry and exit of lymphocytes must exist in the circulatory system. Animal studies have indicated that up to 5 times the total number of lymphocytes present in the blood at any one time, are delivered to the circulation via the thoracic duct every 24 hours. Pavementing of leucocytes has been shown to occur in the pulmonary capillaries of dogs and rabbits in the leucopenia of anaphylactic shock. The authors sought to detect and study a possible white cell removal mechanism in human lung.

Eight transfusions of leukemic blood from 7 donors were given to 5 volunteer non-leukemic cancer-bearing recipients of short prognosis. Six of the donations were lymphogenous and 2 were myelogenous. It was found experimentally accurate to include as mononuclear cells all lymphocytes, monocytes, and the early mononuclear forms of myelogenous leukemia. Evan's blue dye was added to the samples in known concentration and this was used as an index of the expected number of mononuclear cells after transfusion. The transfusion samples varied from 220 c.c. to 645 c.c. with white counts from 80,000 to 302,000 per cu. m.m. and differential counts of 93.9 to 99.1% mononuclear cells.

Of the 8 experiments performed, 2 were discarded because of technical difficulties. In one experiment they proved that there was no appreciable decrease in blood leucocyte count after passing leukemic blood through a recipient's lower limb. In 5 experiments they proved that there was a marked decrease in leucocyte count after a single passage of the leukemic blood through the recipients' lungs, and these results were statistically very significant. The postulated pulmonary mechanism is therefore a fact.

A reaction resembling anaphylaxis with marked respiratory symptoms occurred in one of these cases. Sustained eosinophilia was produced in two instances although this condition is common in cancer patients. There were no hematologic or clinical signs of leukemic transmission although the maximum period of observation was only 9 months.

S. Librach

OBSTETRICS

Renal Function in Pregnancy Toxemia: De Alvarez. Am. J. Obst. & Gyn., **60:** No. 5, 1950.

In an endeavour to shed light on the elusive etiology of the toxemias of pregnancy, Dr. Alvarez carried out painstaking kidney function tests with thirty toxic patients classified as follows:

I Pre-Eclampsias	(a) Mild	9
	(b) Severe	13
II Hypertensive Toxemia		8

(Nephritic Toxemia was not mentioned.)

He found that the blood flow through the glomeruli as indicated by the renal plasma flow was generally reduced; and that it was especially low in the hypertensive toxemia group where hypertensive vascular change as well as renal edema and toxic vasospasm tended to reduce the flow.

The proportion of the plasma filtered by the glomerulus (filtration fraction) was low normal in the pre-eclampsias and high in the hypertensive toxemias due to the higher filtration pressure.

The rate at which plasma passed through the glomerular filter (glomerular filtration rate) was low in half and high

in a fifth of the patients. With reduced glomerular blood flow and reduced filtration in most of the pre-eclampsias one can easily understand the overall lowered filtration rates.

With regard to salt and water balance he found that the kidney excreted sodium when the serum concentration was raised. When sodium is diverted into edema fluid without raising the serum sodium, the kidney does not excrete it and the body goes into positive sodium balance at the rate of 1.4 milliequivalents per litre of edema fluid. Large water intake is permissable with low sodium intake provided the cardiovascular system is not overloaded.

He thought that the only data useful in prognosis was that to be gained from intravenous pyelography and concentration tests.

It is important that this detailed study on thirty cases supported the general finding of a lowered glomerular filtration rate, even though the renal function tests did not delineate a distinct pattern for the toxemias.

P. Beacock

A Vaginal Jelly Alone As a Contraceptive in Post Partum Patients. Goldstein, L. Z., Western J. of Surg., Obst., and Gyn., **58:** No. 12, 1950.

A study of 242 cases was undertaken between January, 1941 and December, 1946 ness of a buffered acid jelly when used without a mechanical occlusive device. Recently delivered patients, especially those with repeated pregnancies, were invited to participate on a voluntary basis, as they, for the most part, had never used any contraceptive agent and were highly prolific. Some had medical indications which made further conception undesirable. No patients were accepted who expressed religious scruples against contraception. Tubes of jelly with a measured applicator were supplied and instructions given in their use. Douches of plain water were permitted but not till at least six hours after sexual relations.

Of the 131 patients using the prescribed contraceptive jelly for any length of time —nine conceived. During the observation period, only six patients conceived during the post partum period of nine months, and three afterwards. Analysis showed that three had discontinued the use of the jelly or used it negligently; two had become pregnant voluntarily; whereas four claimed regular use of the jelly. These last four cases were accepted as a failure of the jelly. The jelly was found to be acceptable in a majority of cases to both husband and wife, with no complaints of irritation, burning or annoying sensation.

The author calculates that the effectiveness of the contraceptive jelly is shown in a reduction of the pregnancy rate from 99 pregnancies per 100 woman years preclinic experience,—to 1.3 pregnancies per 100 woman years postclinic experience; an efficiency of 98 per cent.

D. M. Fraser

NEWS AND NOTES

Medical Society

The Oslerian Society was officially founded on February 1st. On that date an organization meeting, under the chairmanship of Dick Farmer was held and a committee was appointed to draft a constitution for the society. Professor Hardolf Wasteneys, on whose suggestion the club was formed, was elected Honorary member.

The purpose of the Oslerian Society is to provide a medium through which students may further their interest in and appreciation of the History of Medicine and the liberal arts. Membership is open to all undergraduates and implies an obligation for active participation within the scope of the society. Papers will be presented during the evening and discussion will follow. Faculty members will be invited as guests and refreshments will mark the end of the evening.

Meetings will be held the fourth Thursday of each month.

* * *

With the attainment of its $10,000 objective, the All Varsity Aid campaign, which was one of the most ambitious and laudable drives ever attempted by the undergraduate body, was successfully concluded in January.

A special committee including Mr. Ignatieff, the Warden of Hart House, and the AVA executive has been formed to guarantee the ultimate distribution of these benefits to the students in India and Pakistan.

* * *

Athletes from the Faculty of Medicine are having a successful season in inter-faculty athletics. The powerful Meds water-polo team has an unbeaten record to date and is favoured to take the championship. The pre-meds have a strong entry in the hockey league.

A squash tournament on a faculty wide basis has been arranged and competition for the James Kinnear Trophy is keen.

* * *

Elections for the Medical Society will be held early in March.

Faculty

The announcement has been made of recent undergraduate scholarship winners. The R.C.A.M.C. Women's Auxiliary Bursary has been awarded to Mr. R. C. Rhodes 5T3. Recipients of Medical Alumni Association Scholarships are Mr. G. S. Cohen 5T5, and Mr. P. H. Melville 5T1. Medical Alumni Association Bursaries have been awarded to Mr. D. G. Massey 5T1, Mr. E. St. E. Thompson 5T2, Mr. R. R. Toews and Mr. R. J. Baird 5T4.

* * *

The Phi Delta Epsilon Fraternity Lecture was given by Dr. William Dameshek of Boston, Mass. on Monday, February 12th at 5.00 P.M. in the North Lecture Room of the Medical Building. The subject of the lecture was "Chemotherapy of Leukemia and Leukosarcoma".

* * *

The Hamilton Academy of Medicine recently presented one of Canada's outstanding obstetricians with an honorary life membership in the academy. Dr. H. B. Van Wyck, professor emeritus in Obstetrics and Gynaecology, University of Toronto, and special lecturer in Humanities in Medicine, thus becomes the second living physician to hold that honour. Dr. Allan S. Kennedy, academy president, made the presentation.

Dr. Van Wyck, a gold medalist and graduate in medicine from the University of Toronto, saw medical service overseas in World War One. He joined the University of Toronto staff in 1921, and holds the additional degrees of F.R.C.S.(C) and F.R.C.O.G.(Edin.)

* * *

Dr. R. I. Harris, associate professor of Surgery, has been made an Honorary Member of the Section of Orthopaedics of the Royal Socicty of Medicine.

* * *

The non-professional exhibition held recently at Eaton's Fine Art Galleries included paintings by staff members of the Faculty of Medicine, Dr. H. B. Van Wyck, Dr. C. H. Best and Dr. G. H. A. Clowes.

* * *

Discussion Groups on Mental Hygiene, given under the auspices of the University Health Service, are being held at the Toronto Psychiatric Hospital during February. On February 1st, Dr. J. D. Griffin, Medical Director, Canadian Mental Health Association lectured on "Hostility —What does it do to You? Dr. A. M. Doyle spoke on Feb. 22nd. His topic was "Worry and Health".

* * *

Dr. G. R. Brow, Royal Victoria Hospital, Montreal, lectured on "The Treatment of Cardiac Infarction" at a meeting of the Academy of Medicine held recently.

Alumni

The membership of the University of Toronto Medical Alumni Association as of December 15th reached 1606 members. This figure includes the graduating class of 1950, all members of which belong to the association for one year without payment of fee.

Miss J. Griffen
A. Robertshaw

Two Fine Studies . . .

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Edited by Dr. R. I. Harris and Dr. R. M. Janes

Forty-three papers presented by students and colleagues of Dr. Gallie at his retirement from the Chair of Surgery at the University of Toronto in 1947. Many previously unpublished new techniques and treatments. Wide variety of contents ensures every surgeon's interest. Profusely illustrated. $9.50

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You know all are good because they're Heinz

Like all the Cereals, Strained Foods and Junior Foods that Heinz prepares especially for babies, the new Heinz Pre-Cooked Barley Cereal is a quality product that doctors can recommend with complete confidence. It is cooked under the most scientific conditions and constant checking in the Heinz Quality Control Laboratories is a further precaution which assures uniform high quality.

ANALYSIS

Total carbohydrates other than Crude Fibre	74.3%
Proteins (N x 6.25)	11.7%
Total Sugar as Sucrose	9.25%
Fat (acid hydrolysis)	2.58%
Crude Fibre	1.20%
Moisture	6.0%
Minerals	4.4%
Calcium	1.03%
Phosphorus	0.74%
Iron	0.034%
Copper	0.00047%
Sod. Cloride	1.01%
Niacin 22.8 mg per 100 grams	
Thiamine Hydrochloride 1.21 mg per 100 grams	
Calories per 100 gms.	364
Calories per ounce	103

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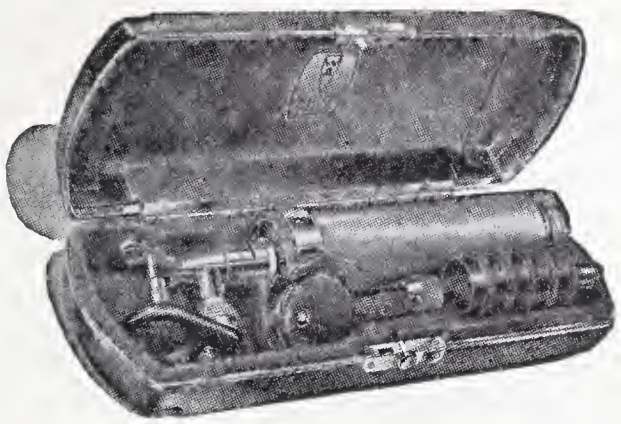

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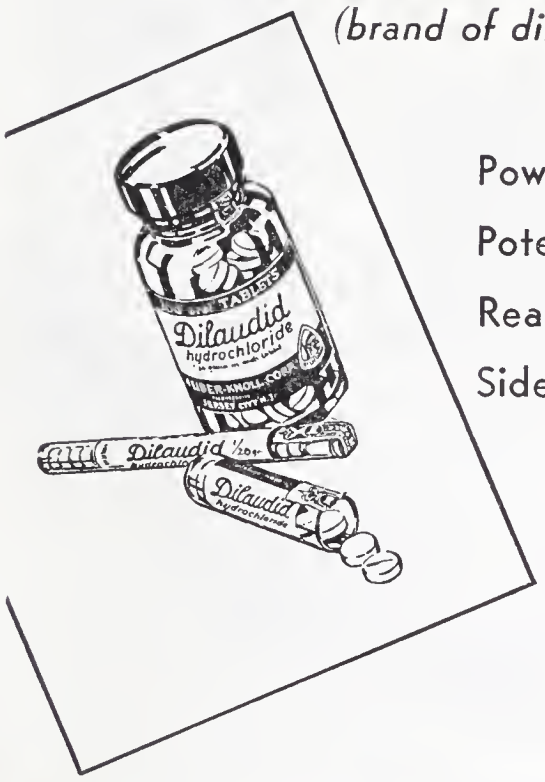

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WITH ALLERGY CASES: A formula of Swift's Meats for Babies enriched with calcium and phosphorus offers an effective milk substitute for infants allergic to milk proteins: "Nutritive Value of Mineral-Enriched Meat and Milk," McQuarrie and Ziegler, Pediatrics, Vol. 5, No. 2, (February) 1950.

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ANCATROPINE INFANT Soluble Tablets

Homatropine Methylbromide	1/250 grain
Phenobarbital Sodium	1/16 grain

ANCATROPINE ALKALINE Compressed Tablets

Dried Aluminum Hydroxide Gel ..	10 grains
Magnesium Hydroxide	5 grains
Homatropine Methylbromide	1/40 grain
Phenobarbital	1/6 grain

Anglo-Canadian
DRUG COMPANY LTD., Oshawa, Canada

ANCA

HABIT TIME OF BOWEL MOVEMENT

SAFE . . .

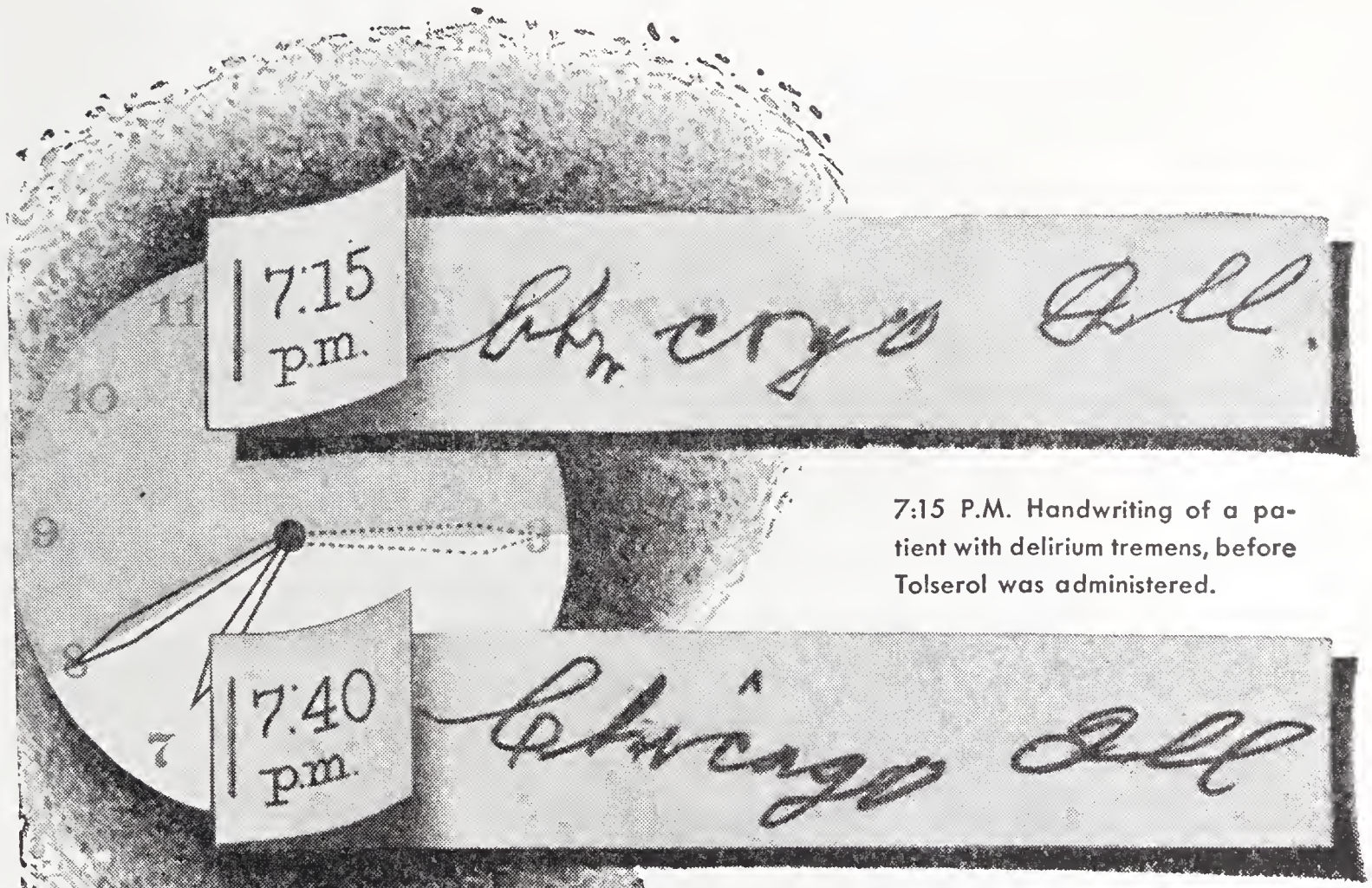
PETROLAGAR, given at bedtime—not with meals—has no adverse effect on absorption of nutritive elements. It provides a relatively small but highly effective dose of mineral oil augmented by a bland, hydrophilic colloid base. The result is a soft-formed, easily passed stool, permitting comfortable bowel movement.

If preferred, Petrolagar may be given thinned with water, milk or fruit juices—with which it mixes readily.

PETROLAGAR PLAIN
PETROLAGAR WITH PENOLPHTHALEIN
PETROLAGAR WITH MILK OF MAGNESIA
PETROLAGAR WITH CASCARA

Wyeth
Registered Trade Mark

in alcoholism...



7:15 P.M. Handwriting of a patient with delirium tremens, before Tolserol was administered.

7:40 P.M. Handwriting of same patient, twenty-five minutes after the oral administration of Tolserol.

Tolserol

***Squibb Mephenesin** (3-o-toloxy, 1-2-propanediol)*

- to control tremor and quiet the patient
- for the relief of withdrawal symptoms
- to reduce or eliminate the use of paraldehyde and barbiturates
- administered orally and intravenously

Elixir, Capsules, Tablets, Solution

"TOLSEROL" IS A TRADEMARK OF E. R. SQUIBB & SONS

E. R. SQUIBB & SONS OF CANADA, LIMITED,
2245 VIAU STREET, MONTREAL

SQUIBB MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

Primary Atypical Pneumonia

you know what it is...

pure crystalline antibiotic of known chemical structure

Lymphogranuloma Venereum

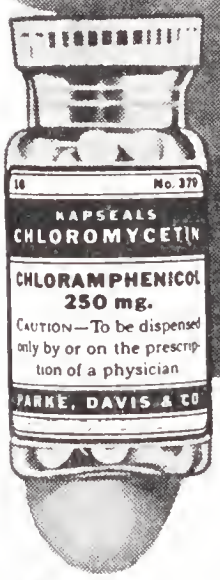
Bacterial Pneumonia

Scrub Typhus

Enteric Fever (salmonella)

Dysentery (shigella)

Granuloma Inguinale



Herpes Zoster

Pertussis

Acute Undulant Fever

you know what it does...

produces rapid response in a wide range of infectious diseases

Typhus Fever

Typhoid Fever

Urinary Tract Infections

Chloromycetin®

Chloramphenicol, Parke-Davis

Supplied in Kapseals® of 250 mg., and in capsules of 50 mg.

Rocky Mountain Spotted Fever

PARKE, DAVIS & COMPANY

MEDICAMENTA VERA